

January 11, 2007

Mr. Rick Brown Interstate Water Management Development Section Colorado Water Conservation Board 1580 Logan Street, Suite 1600 Denver, Colorado 80203

Subject: Water Supply Reserve Account 2007 Grant Application for the Strategic Plan for the Long Term Management of Non-Native Phreatophyte Trees and a Mapping Project for the Arkansas River Basin

### Dear Rick:

Enclosed is a grant application from the Southeastern Colorado Water Conservancy District for the Water Supply Reserve Account 2007 Grant Application for the Strategic Plan for the Long Term Management of Non-Native Phreatophyte Trees and a Mapping Project for the Arkansas River Basin for \$50,000. At the Arkansas Basin Roundtable's (ABRT) recent meeting, this grant application was approved with full consensus for the Statewide Competing Fund. The ABRT Needs Assessment Committee approved this on a 11-1 vote at their December 8, 2006, meeting to move this to the full Roundtable for consideration yesterday. This application has received a thorough review and full discussion by our Roundtable at a regularly scheduled and noticed meeting, with a quorum present.

In closing, if I can be of any assistance to you and your staff or the Water Conservation Board in their evaluation, please do not hesitate to contact me at: 719.584.0221 or <a href="mailto:ahamel@pueblowater.org">ahamel@pueblowater.org</a>.

Sincerely,

Alan C. Hamel, Chair

lkm enc

c: Jay Winner Jonathon Fox Gary Barber Eric Hecox



### SOUTHEASTERN COLOR ADO

### **Water Conservancy District**

"Your Investment in water"

January 11, 2007

Mr. Rick Brown
Intrastate Water Management and Development Section
Colorado Water Conservation Board
1580 Logan Street, Suite 600
Denver, CO 80203

Dear Mr. Brown.

The Southeastern Colorado Water Conservancy District is requesting a \$50,000 grant from the Water Supply Reserve Account to fund the development of a Strategic Plan for the Long-Term Management of Non-Native Phreatophyte Trees and for a mapping project for the Arkansas River Basin.

Non-native phreatophytes trees (Tamarisk, Russian olive and Siberian elm), have infested much of the riparian lands and are moving into the upland areas within the Arkansas River Basin. These invasive trees are causing serious impacts to our limited water resources. In addition, dense stands of the non-native trees have restricted recreational accessibility, negatively impacted wildlife habitat, and increased the risk for wildfires and flooding.

To compliment the Plan a comprehensive data base will be developed that will assist property owners and land managers in determining proper control, restoration, monitoring, and long-term maintenance methods for a particular infestation level and land situation. This data base will be available on a website and it will enable the District and agencies to track the progress of projects and evaluate the methods that are implemented.

Another extremely important element of the project is to map the entire basin to provide a clear understanding of the extent of the problem. The Tamarisk Coalition, with funding from the Colorado Water Conservation Board, the District and the Purgatoire River Water Conservancy District, recently mapped the lower portion of the main stem of the Arkansas River and several of the major tributaries. Unfortunately, the mapping project is incomplete because it does not include the upper basin from Pueblo Reservoir west to the headwaters, small reservoirs, lakes and ponds, nor the hundreds of miles of creeks, ephemeral streams, canals, ditches, and dry washes that harbor these thirsty invaders. This type of information is invaluable in determining the total acres of infestation and average density, estimate of current and future water losses, as well as the costs associated with control, revegetation and long-term management.

31717 UNITED AVENUE

PUEBLO, CO 81001-4817
• FAX (719) 948-0036

PHONE (719) 948-2400

We believe this project fits the constraints of Senate Bill 06-179 as called out in subparagraph III. The Strategic Plan development and mapping project complies with items C and D of that Act. The Plan development meets several of the SWSI objectives: Optimize existing and future water supplies, enhance recreational opportunities, and provide for environmental enhancements.

The development of the Strategic Plan would assist the Basin in implementing Governor Owens' 2003 Executive Order and the Department of Natural Resource's 2004 10-year Plan to Control Tamarisk and Restore Riparian Plant Communities in Colorado. The Strategic Plan will also assist the Basin in taking advantage of the funding source created by the recently passed Federal legislation H.R. 2720, "The Salt Cedar and Russian Olive Control Demonstration Act". In addition, it will support securing funds to implement the Plan from new and existing state and federal programs, foundations, and other sources.

CWCB has already invested time, energy, and dollars in mapping the main stem of the Arkansas and the major tributaries and reservoirs. It is clear that the long-term management of the non-native phreatophytes in Colorado is in the best interest of the Board, the State and the Arkansas Basin. Your consideration of the grant application is greatly appreciated.

Sincerely,

James W. Broderick Executive Director

James W. Brodewick



Name of Water Activity/Project

application that you are addressing (i.e., A.1. etc.).

rick.brown@state.co.us.

### COLORADO WATER CONSERVATION BOARD

### WATER SUPPLY RESERVE ACCOUNT 2006-2007 GRANT APPLICATION FORM



**River Basin Location** 

Development of a Strategic Plan for the Long-Term Management of Non-Native Phreatophyte Trees and a Mapping Project for the Arkansas River

\$50,000.00	Basin Account	X Yes
	X Statewide Account	No
Amount of Funds Requested	Please Check Applicable Box	Approval Letter Signed By Roundtable Chair and Description of Results of Evaluation and Approval Process
* For the Basin Account, the Appli	ication Deadline is 60 Days Prior to t	he Bimonthly CWCB meeting.
The CWCB meetings are posted at	www.cwcb.state.co.us and are general	ly the third week of the month.
* For the Statewide Account, the A	Application Deadline is 60 Days Prior	to the March and September
CWCB Board Meetings.		

<u>Instructions</u>: This application form should be emailed, typed, or printed neatly. The Water Supply Reserve Account Criteria and Guidelines can be found at <a href="http://cwcb.state.co.us/IWMD/">http://cwcb.state.co.us/IWMD/</a>. The criteria and guidelines should be reviewed and followed when completing this application. You may attach additional sheets as necessary to fully answer any question, or to provide additional information that you feel would be helpful in evaluating this application. Include with your application a cover letter summarizing your request for a grant. If you have difficulty with any part of the application, contact Rick Brown of the Intrastate Water Management and Development (Colorado Water Conservation Board) for assistance, at (303) 866-3514 or email Rick at

\* In completing the application you may attach additional sheets if the form does not provide adequate

If additional sheets are attached please be sure to reference the section number of the

Generally, the applicant is also the prospective owner and sponsor of the proposed water activity. If this is not the case, contact the Rick Brown before completing this application.

Form Kevisea	October 2006		

### Part A. - Description of the Applicant (Project Sponsor or Owner);

1.	Applicant Name(s):	Southea Distric		n Colorado	Water Conservancy
	Mailing address:	31717 Un Pueblo, C			
	Taxpayer ID#:	846012143		Email address:	jean@secwcd.com
	Phone Numbers:	200111000.	719-9	948-2400	
		Home:	719-2	251-2845	
		Fax:	719-	948-0036	

2. Person to contact regarding this application if different from above:

Name:	Jean Van Pelt
Position/Title	Conservation Outreach Coordinator

3. Provide a brief description of your organization below: Refer to Part 2 of criteria and guidance for required Information. Attach additional sheet(s) as needed.

The Southeastern Colorado Water Conservancy District (District) was formed under Colorado State Statutes on April 29, 1958 by the District Court in Pueblo, Colorado. The District's purpose is to develop and administer the Fryingpan-Arkansas Project. The District holds the water rights to the Project. The District has allocated an average of 55,600 acre-feet of water annually to cities, towns, municipalities, and ditch, canal, reservoir and irrigation companies within the District. In addition, the District provides water and return flows for well augmentation.

The District encompasses portions of Bent, Chaffee, Crowley, El Paso, Fremont, Kiowa, Otero, Prowers, and, Pueblo counties within the Arkansas River Basin. The District includes large metropolitan cities, small (Addendum Part A. 3.)

### Form Revised October 2006 Part B. - Description of the Water Activity - Please Refer to Criteria and Guidance Document for Eligibly Criteria Name of water activity/project: 1. Application for Grant Funding to Develop a Strategic Plan for the Long-Term Management of Non-native Phreatophyte Trees and a Mapping Project for the Arkansas River Basin. 2. What is the purpose of this grant application? Check one. Environmental compliance and feasibility study Technical assistance regarding permitting, feasibility studies, and environmental compliance Studies or analysis of structural, nonstructural, consumptive, nonconsumptive water needs, projects, Χ or activities (Please specify) (Please see - Addendum Part B. 2.) Χ Structural and/or nonstructural water project or activity – Non-Structural Water Activity

Water Supply Reserve Account – Grant Application Form

Form Revised October 2006

3. Please provide an overview of water project or activity to be funded including – type of activity, statement of what the activity is intended to accomplish, the need for the activity, the problems and opportunities to be addressed, expectations of the participants, why the activity is important, the service area or geographic location, and any relevant issues etc. Please include any relevant Tabor issues. Please refer to Part 2 of criteria and guidance document for additional detail on information to include. Attach additional sheets as needed.

Southeastern Colorado Water Conservancy District is requesting \$50,000 in grant funding to assist in funding the development of a Strategic Plan for the Long-Term Management of Non-Native Phreatophyte Trees and to finish mapping the Basin to inventory the infestation level of these invasive species.

Non-native phreatophytes trees (Tamarisk, Russian olive and Siberian elm), have infested much of the riparian lands and are moving into the upland areas within the Arkansas River Basin. The invasives are causing serious impacts to our limited water resources. The Tamarisk Coalition has estimated on the main stem of the Arkansas River the current water losses, above and beyond what native vegetation would use, is 46,600 acre feet per year. When the water loss from the major tributaries and reservoirs are added an additional 12,000 acre feet per year is being lost. If this problem is not addressed, future water losses from "infilling" only (no expansion from existing infested areas) are estimated to be 86,000 acre-feet per year on the river and 44,000 acre feet on the major tributaries and reservoirs. In addition, dense stands of the non-native trees have restricted recreational accessibility, negatively impacted wildlife habitat, and increased the risk for wildfires and flooding.

The planning and mapping project is designed to develop a comprehensive approach on a basin-wide scale, without which control efforts will be largely ineffective. A specific goal is to develop a strategic long-term management plan to efficiently and effectively implement control, riparian restoration, monitoring, and maintenance measures. To compliment the Plan a comprehensive data base will be developed that will assist property owners and land managers in determining proper control, restoration, monitoring, and long-term maintenance methods for a particular infestation level and land situation. This data base will be available on a website and it will enable the District and agencies to track the progress of the Plan as it is implemented.

The Strategic Plan would assist the Basin in implementing Governor Owens' 2003 Executive Order and the Department of Natural Resource's 2004 10-year Plan to Control Tamarisk and Restore Riparian Plant Communities in Colorado. The Strategic Plan will also assist the Basin in taking advantage of the funding source created by the recently passed Federal legislation H.R. 2720, "The Salt Cedar and Russian Olive Control Demonstration Act". In addition, it will support securing funds from new and existing state and federal programs, foundations, and other sources.

Another extremely important element of the project (Addendum Part B.3.)

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4. Please provide a brief narrative of any related or relevant previous studies. Attach additional sheets as needed.

The District has contributed to and utilized the mapping data the National Institute of Invasive Species has developed in regard to levels of Tamarisk infestations in the Arkansas Basin.

As previously stated, the District supported the mapping project on the main-stem of the Arkansas River and the major tributaries performed by CWCB and the Tamarisk Coalition. This data has been very beneficial in determining acres of infestation and average density, estimate of current and future water losses, as well as the costs associated with control, revegetation and long-term management. (Addendum Part B.4.A - Tamarisk Mapping and Inventory, Arkansas and Purgatoire Rivers)

The District is also providing support and in-kind contributions to Dr. Ken Lair's research performed for the Bureau of Reclamation regarding the Evaluation of Invasive Species Management Strategies and Technologies for Protection of Drawdown Zones in Annually Drafted or Drought-Affected Reservoirs. (Addendum Part B.4.B-USBR grant information) The in-kind contribution consists of technical review of experimental approach, assessment of vegetation and hydrologic data gaps and availability and assistance with site selection, sampling design and field data collection. The research project will be completed the end of 2007.

Colorado State University (CSU) and the University of Denver are conducting a research project in the upper basin pertaining to types of control and revegetation methods for Tamarisk. The end results will be a Best Management Practices handbook that is specific to this area. This information will be implemented into the proposed Plan and data base.

The District has financially supported CSU's Lower Arkansas valley research project performed by Dr. Timothy Gates, Dr. Luis Garcia and Dr. John Labadie. The focus of the research is to develop field data and modeling tools (Addendum Part A.4.C.)

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5. Please provide a copy of the proposed scope of work. Please refer to Part 2 of the criteria and guidance document for detailed requirements. Attach additional sheets as needed.

The Southeastern Colorado Water Conservancy District requests a grant for \$50,000 from the Water Supply Reserve Account for the purpose of developing a strategic plan for the long-term management of non-native phreatophyte trees and a mapping project for the Basin. We believe this project fits the constraints of Senate Bill 06-179 as called out in subparagraph III. The strategic plan development and mapping project complies with items C and D of that Act.

The District's goal is to serve in a leadership position overseeing a basin-wide approach to the Tamarisk problem. The six objectives necessary to fulfill this goal are:

- 1. Develop a plan that encompasses the entire Basin.
- 2. Perform an inventory of the extent of infestation within the Basin.
- 3. Implement various types of control measures to remove the invasive species.
- 4. Restore the native vegetation.
- 5. Perform monitoring projects to gauge success and increase knowledge.
- 6. Oversee the long-term management to ensure the problem doesn't rebound.

To assist in the Plan development a Technical Advisory Committee will be created that will consist of mapping and GIS specialists, federal, state and local agencies, weed managers, university staff, Tamarisk Coalition staff, etc. This Committee will assist with identifying the ecological setting of the Basin and gathering information that will be used in the development of the Plan. This information will include mapping and land uses, community input for water resource protection and development, wildlife enhancement, economic and cultural goals, and health and safety issues.

The Plan will need to define alternatives and select a course of action by defining short and long term goals. The alternatives and goals will be based on federal, state, and local community desires and the existing ecological setting. In addition, ways to provide short, intermediate, and long-term funding alternatives for implementatin of the plan will have to be developed and secured. Funding needs to be consistent and may be available from federal, state, local sources, foundations, taxes, user fees, bonds, incentives, and grants.

The Arkansas River Basin Plan for Long-term Management of Nonnative Phreatophytes Trees will provide a broad framework for management of (Addendum Part B.5.A., Addendum Part B.5.B. - budget information and Addendum Part B.5.C.- project schedule.)

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6. List the names and addresses of any technical or legal consultants retained to represent the applicant or to conduct investigations for the water activity/project.

Name Address/Phone Number Burns, Figa & Will P.C. 6400 S. Fiddlers Green Circle Suite 1030, Greenwood Village, CO 80111 303-796-2626 Tim Carlson, Tamarisk Coalition PO Box 1907 Grand Junction, CO 81052 970-256-7400

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7. Water Availability and Sustainability – this information is needed to assess the viability and effectiveness of the water project or activity. Please provide a description of each water supply source to be utilized for, or the water body to be affected by, the water activity. For water supply sources being utilized, describe its location, yield, extent of development, and water right status. For water bodies being affected, describe its location, extent of development, and the expected effect of the water activity on the water body, in either case, the analysis should take into consideration a reasonable range of hydrologic variation. Attach additional sheets as needed.

Non-native phreatophyte trees have infested much of the riparian lands and are moving into the upland areas within the Arkansas Basin. Dense stands of the non-native trees have restricted recreational accessibility, negatively impacted wildlife habitat, and increased the risk for wildfires and flooding. In addition, these invasives are causing serious impacts to an already limited and overappropriated water resource. The Tamarisk Coalition has estimated on the main-stem of the Arkansas River the current water losses, above and beyond what native vegetation would use, is 46,600 acre-feet per year. When the water loss from the major tributaries and reservoirs are added in an additional 12,000 acre-feet per year is being lost. If this problem is not addressed, future water losses from "infilling only" (no expansion from existing infested areas) are estimated to be 86,000 acre-feet per year on the river and 44,000 acre feet on the major tributaries and reservoirs. (Addendum Part B. 4. A.- Tamarisk Coalition Mapping & Inventory Summary - Arkansas & Purgatoire River)

8. If you have not specifically and fully addressed the Evaluation Criteria found in Part 3 of the criteria and guidance document please provide additional detail here. Attach additional sheet(s) if needed.

### Promoting Collaboration & Cooperation

- a. The Plan can become a catalyst for cooperation in the Arkansas Basin by bringing multiple interests together to control an invasive species that is consuming huge amounts of a limited supply of water resources and overtaking riparian and upland areas.
- b. There are nineteen counties represented in the Basin and each will be asked to contribute either financially or with in-kind assistance. The collaborative effort will help stop the spreading of trees and will assist with reducing the gap that SWSI has identified in the Basin.

### Facilitating Water Activity Implementation

c. Without funding for this project the region will not have a long-term Plan that will(Please see Addendum Part B.8.)

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The above statements are true to the best of my knowledge:

**Signature of Applicant:** 

Print Applicant's Name: James W. Broderick

### **Return this application to:**

Mr. Rick Brown
Intrastate Water Management and Development Section
COLORADO WATER CONSERVATION BOARD
1580 Logan Street, Suite 600
Denver, CO 80203

James W. Brodeeu R

To submit applications by Email, send to: <a href="mailto:rick.brown@state.co.us">rick.brown@state.co.us</a>

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### **Reference Information**

The following information is available via the internet. The reference information provides additional detail and background information regarding these criteria and guidelines and water policy issues affecting our state.

### Colorado Water Conservation Board Policies

Loan and Grant policies and information are available at - <a href="http://cwcb.state.co.us/Finance/">http://cwcb.state.co.us/Finance/</a>

Water Supply Reserve Account Criteria and Guidelines –

http://cwcb.state.co.us/IWMD/tools.htm#Water\_Supply\_Reserve\_Account

### Interbasin Compact Committee and Basin Roundtables

Interbasin Compact Committee By-laws and Charter –

 $\underline{http://dnr.state.co.us/Home/ColoradoWaterforthe21stCentury/Interbasin+Compact+Committee/IbccHomePage.htm}$ 

Basin Roundtable By-laws –

http://dnr.state.co.us/Home/ColoradoWaterforthe21stCentury/IbccHome.htm

### Legislation

House Bill 05-1177 - Also known as the Water for the 21st Century Act –

http://cwcb.state.co.us/IWMD/statutes.htm

House Bill 06-1400 – Adopted the Interbasin Compact Committee Charter –

http://cwcb.state.co.us/IWMD/statutes.htm

Senate Bill 06-179 - Created the Water Supply Reserve Account -

http://cwcb.state.co.us/IWMD/statutes.htm

### Statewide Water Supply Initiative

General Information - http://cwcb.state.co.us/IWMD/

Phase 1 Report - <a href="http://cwcb.state.co.us/IWMD/PhaseIReport.htm">http://cwcb.state.co.us/IWMD/PhaseIReport.htm</a>

### Addendum Part A. 3. Provide a brief description of your organization

rural towns, and agricultural areas ranging from very small farms to large ranching operations. It truly is representative of "Rural America" where the agricultural sectors are suffering out-migration and the larger metropolitan areas are facing problems common to growing areas.

The District is governed by a 15-member Board of Directors that are appointed by district court judges. The District's daily operations are managed by an Executive Director, with a staff that includes a Manager of Projects, Director of Engineering and Resource Management, Water Conservation Coordinator, Administrative Manager, Engineering Support Specialist, Finance Manager, and an Administrative Associate.

The District has increased significantly in valuation. When formed in 1958, the District had an assessed valuation of slightly less that \$400 million. The assessed valuation in 2006 was approximately \$6.3 billion.

District activities are supported and financed by ad valorem taxes paid by taxpayers within the District boundaries. Property owners pay up to a 1 percent mill ad valorem tax to support District operations and guarantee the repayment contract with the Federal government.

The overriding priority of the District continues to be the annual fulfillment of its obligations as defined by statute and contract commitments with its water users and the United States. Among these priorities are ongoing commitments to water conservation.

As the largest wholesale water distributor in the area, District operations, to some degree, influence all water and related land resource activities in its service area. Policies established by the Board of Directors consistently have been aimed at yielding maximum possible benefits to its water users through flexibility of operations and adaptability to changing needs. The District Board members and staff encourage policies of wise and efficient use of all available water supplies.

On June 19, 2003 the District Board of Directors adopted a resolution authorizing the District to participate in the continued pursuit of a western-wide Tamarisk Control Program using a regional approach. The District Board supported the efforts to pass legislation providing the financial tools for the implementation of regional projects for the control of Tamarisk and other non-native plants impacting western rivers.

Robert Hamilton, Director of Engineering and Resource Management for the District, was appointed to represent the Arkansas River Basin on the Board of Directors of the Tamarisk Coalition. The Coalition is a non-profit alliance working to restore riparian lands. In September 2004, the Board of Directors unanimously supported a resolution to financially contribute to the Tamarisk Coalition

### Addendum Part A.4.C.

Please provide a brief narrative of any related or relevant previous studies.

that can be incorporated into decision-making criteria to maximize "liberated" water via reduction in nonbeneficial consumptive use from high water tables under fallow alluvial land and from invasive phreatophyte vegetation along the river corridor.

The District has been active in outreach and education by sponsoring numerous workshops, tours, and seminars pertaining to funding sources and control and restoration methods. The District also contributes technical assistance and participates with organized projects for controlling these invasives within the Basin.

### Part B. 2. Addendum

Studies or analysis of structural, nonstructural, consumptive, nonconsumptive water needs, projects, or activities (Please specify)

The purpose is to develop a nonstructural strategic plan for the long-term management of non-native phreatophyte trees and a mapping project for the Arkansas River Basin.

### Addendum Part B. 3.

Please provide an overview of water project or activity to be funded.

is to map the entire basin to provide a clear understanding of the extent of the problem. The Tamarisk Coalition, with funding from the Colorado Water Conservation Board, the District and the Purgatoire River Water Conservancy District, recently mapped the lower portion of the main stem of the Arkansas River and several of the major tributaries. Unfortunately, the mapping project is incomplete because it does not include the upper basin from Pueblo Reservoir west to the headwaters, small reservoirs, lakes and ponds, nor the hundreds of miles of creeks, ephemeral streams, canals, ditches, and dry washes that harbor these thirsty invaders. This type of information is invaluable in determining the total acres of infestation and average density, estimate of current and future water losses, as well as the costs associated with control, revegetation and long-term management.

### Tamarisk Mapping & Inventory Summary Arkansas and Purgatoire Rivers

Inventory Background & Objectives — In 2005 and 2006, the Tamarisk Coalition completed an inventory of tamarisk infestations on the Arkansas River and Purgatoire River watersheds and their main tributaries for the Colorado Water Conservation Board (CWCB). The purpose of this work was to establish and implement an inventory protocol that would be economical to perform and would provide a clear understanding of the extent of the tamarisk problem. These inventory/mapping protocols (attached) proved to be successful and were used in 2006 to identify tamarisk throughout the remainder of the state.

Inventory Approach - Inventory and mapping were coordinated with the U.S. Geological Survey's (USGS) efforts to establish a national on-line database conforming to the weed mapping standards developed by the North American Weed Management Association. The basic approach utilized existing aerial photography, satellite imagery, and local knowledge available from counties, river districts, soil and water conservation districts, state agencies, Army Corps of Engineers, National Resources Conservation Service, USGS, CSU, and The Nature Conservancy. This information was then "ground-truthed" by a 2-man team to confirm infestation density, maturity, height, accessibility, presence of native species, and miscellaneous site characteristics. GPS data and digital photo records were taken and shapefiles were developed using GIS. Over 600 miles of main stem river, major tributaries, and major reservoirs were surveyed using this approach. The starting point for the Arkansas River was Pueblo Reservoir dam and for the Purgatoire River it was Trinidad Reservoir dam. This information, in the form of shapefiles and attribute data, has been transformed into a digital GIS database which soon will be available on the USGS invasive species website, www.niiss.org.

Finding – The inventory data for the Arkansas and Purgatoire rivers and their major tributaries are presented in Tables 1 through 4 which are attached for each River. Table 1 presents the general mapping data; whereas, Table 2 provides estimates on current and future water losses associated with the tamarisk infestations and the estimated costs for tamarisk control and revegetation. Tables 3 and 4 provide detailed information on each infested area (shapefiles) and its unique attributes. The water losses and cost estimates are based on the most recent research and statistical analysis available through the USDA, NOAA, USGS, CSU, National Invasive Species Council, Tamarisk Coalition, and others. The following represents the major findings (Note: values presented below are rounded from Tables 1-4:

1. The Arkansas River from the CO/KS state line has approximately 29,000 total acres of tamarisk infestation with an average density (canopy cover) of 54%. Because the Arkansas River tends to be a broad floodplain river, its tamarisk infestations are wide averaging over 1,200 feet with a maximum width of nearly one and a half miles near John Martin Reservoir.

- 2. The Purgatoire River has both broad floodplains and a narrow canyon section. As a result, it has significant areas of infestation (9,250) but has a relatively low average density of 29%. Purgatoire River tributaries are also lightly infested with 26% average density and approximately 750 acres of total infested area.
- 3. The major tributaries for the Arkansas River (Huerfano River, Fountain Creek, Big Sandy Creek, and Buffalo Creek) have 4,850 acres of infestation with major reservoirs (Lake Meredith, Adobe Creek, Neeskah, Neenoshe, and Sheridan Lake) having an additional 9,800 acres of infestation. The average density for all of these areas is approximately 28%.
- 4. Current water losses are based on the amount of water tamarisk is using under observed densities minus the water that would be used by native plants. Figure 1 represents the differences in vegetative cover with and without tamarisk and illustrates tamarisk occupying an area much greater than the riparian zone which typically would support cottonwoods and willows, also phreatophytes. The significant water losses occur as tamarisk occupies upland areas within the floodplain that would normally have dryland xeric vegetation such as grasses, sage, rabbit brush, etc. These uplands of the Arkansas and Purgatoire rivers and their tributaries typically exceed 50% of the tamarisk infested areas. Based on these conditions, the estimates of current water losses above and beyond what native vegetation would use are:
  - a. Arkansas River = 46,600 acre-feet per year.
  - b. Arkansas River major tributaries and reservoirs = 12,000 acre-feet per year.
  - c. Purgatoire River = 8,000 acre-feet per year.
  - d. Purgatoire River major tributaries = 600 acre-feet per year.
- 5. Future water losses assume an infilling of the existing infestation areas that will likely occur over the next several decades based on similar conditions observed in other states (NM, UT, and NV). Future water losses from infilling only (no expansion from existing infested areas) are estimated to be:
  - a. Arkansas River = 86,000 acre-feet per year.
  - b. Arkansas River major tributaries and reservoirs = 44,000 acre-feet per year.
  - c. Purgatoire River = 27,000 acre-feet per year.
  - d. Purgatoire River major tributaries = 2,000 acre-feet per year.
- 6. Costs for tamarisk control and revegetation are based on current work being performed by the National Invasive Species Council on an economic model that incorporates *Integrated Pest Management* practices with planning, design, control, revegetation, monitoring, and maintenance activities. Estimated costs are summarized in Table 5:

Table 5: Economic summary

River	Total Costs*	Average Cost per Acre Treated*	Average Cost per Acre-foot of Water Preserved*	Average Cost per Mile*
Arkansas River	\$44,000,000 (±\$9,500,000)	\$1,500	\$950	\$220,000
Arkansas R. Tributaries & Reservoirs	\$12,000,000 (±\$1,700,000)	\$850	\$1,000	\$53,000
Purgatoire River	\$8,000,000 (±\$1,000,000)	\$870	\$1,000	\$45,000
Purgatoire R. Tributaries	\$600,000 (±\$80,000)	\$810	\$1,100	\$2,000

<sup>\*</sup> Rounded values from Tables 2

- 7. If tamarisk control and revegetation occurs on any of these river or tributary sections, the water lost to the atmosphere through evapotranspiration will be preserved within the groundwater and/or surface water regimes. It is unknown at this time, without further research, when and if these waters would be available for beneficial uses.
- 8. The costs of water retained within the hydrologic system of approximately \$1,000 per acre-foot should be compared to the value placed on the purchase of senior water rights because tamarisk is always using water even during a drought.
- 9. The method used to develop this inventory information is predicted to identify 85 to 90 percent of tamarisk within the watersheds of the Arkansas and Purgatoire rivers. The remaining percentage represents small pockets of infestations that are scattered throughout the region. Because these outlying infestations are not included in the cost development, a contingency of approximately 20% should be added to these cost values to account for their identification and remediation.

## Tamarisk Induced Changes is Channel Structure and Associated Habitats

Tim Carlson\*, Greg Newman\*, Tom Stohlgren\*\*

The Tarman Condun.

T

# Floodplain

Historical Heterogeneous, Wide, Braided Channel Habitat

Upland

Riparian

Mesquite, Saltbush, arrowweed, saltgrass:

(Typical of CA, AZ, NM, TX)

Groundwater

Before Invasion

Riparian Zone

Upland

Sage, Rabbitbrush, Greaswood, bunctigrass:



Sandbar

Floodplain and Channel Modified by Tamarisk into a Homogeneous, Narrow, Deep Run Habitat

Tamarisk Thicket

The state of the s amarisk ifilicker

Reduced Channet Sedimented Backwater

Groundwater

noiseval 1911A

The Manager of the Ma Aggrated Bank

Figure

Acknowledgements:

Tim Carison, Tom States Coatton, United States Geological Survey, National Agroneutics and Space Administration, National States Geological Survey, National Agroneutics and Space Administration, National Resource Ecology Laboratory, Colorado States Univen







Arkansas Table 1: General Tamarisk Inventory Data for Arkansas River and its Related Waterways CO/KS state line to Pueblo Reservoir Dam, CO

Total Canopy Cover (acres)	3,609 6,593 3,018 2,545	15,765	Total Canopy Cover (acres)	529 514 2,706 284	4,033
Total Acreage	6,088 9,714 6,177 7,026	29,005	Total Acreage	1,840 1,953 9,790 1,058	14,641
Average Density (%)	59% 68% 49% 36%	54%	Average Density (%)	29% 26% 28% 27%	28%
Min Width (ft)	180 200 280 150		Min Width (ft)	30 N/A 10	
Max Width (ft)	3,200 7,000 4,300 5,900		Max Width (ft)	2,700 2,100 N/A 1,060	
Average Width (ft)	1,025 1,908 944 1,115	1,215	Average Width (ft)	759 732 N/A 218	
Cummulative River Miles	0 49 91 145	/61	River Miles	22 N/A 40	82
Arkansas River Main Stem	CO/KS State Line Prowers County Bent County Otero County Pueblo County to Pueblo Dam	10tals =	Related Waterways	Huerfano River Fountain Creek Arkansas Reservoirs* Arkansas Tributaries**	Totals =

\*Arkansas Reservoirs include: Lake Meredith, Adobe Creek Res., Neeskah Res., Neenoshe Res., and Sheridan Lake \*\*Arkansas Tributaries include: Big Sandy Creek and Buffalo Creek

Minimum width may exceed average width because some areas of low infestations are not continuous along a river stretch.

Arkansas Table 2: Existing and Future Water Loss Estimates due to Tamarisk Infestations in Arkansas River Watershed and Estimated Control & Revegetation

**Cost estimates for Tamarisk Control & Revegetation	\$10,054,330 \$18,220,239 \$8,573,169 \$7,276,000	\$44,123,739	\$53,732,226 \$34,514,769	\$1,521 \$946 \$223,978	Tamarisk Control & Revegetation	\$1,917,038 \$1,502,806 \$7,825,675 \$930,687	\$12,176,205	\$13,814,313 \$10,528,098	\$832 \$1,013 \$53,055
Loss (acrefect/year)	17,579 29,040 18,331 20,825	85,775	High Range = Low Range ≖	Average cost per acre of infestation = s groundwater and/or surface water = Average cost per mile =	Future Water Loss (acre- feet/year)	5,559 5,309 29,404 3,338	43,609	High Range == Low Range ==	Average cost per acre of infestation = s groundwater and/or surface water = cost per mile (excluding reservoirs) =
Current Water Loss (acre- feet/year)	10,422 19,711 8,956 7,542	46,631		Average cost per rved as groundwater an Ave	Current Water Loss (acre- feet/year)	1,598 1,397 8,127 895	12,017		Average cost per acre of infestation served as groundwater and/or surface water Average cost per mile (excluding reservoirs)
% Area capable of Supporting Cottonwood/Willow Plant Community	55% 43% 46%	47%		Average cost per acre-foot of water preserved as groundwater and/or surface water = Average cost per mile ≈	% Area capable of Supporting Cottonwood/Willow Plant Community	39% 75% 41% 23%	44%		Average cost per acre-foot of water preserved as groundwater and/or surface water = Average cost per mile (excluding reservoirs) =
Total Canopy Cover (acres)	3,609 6,593 3,018 2,545	15,765			Total Canopy. Cover (acres)	529 514 2,706 284	4,033		
Total Acreage	6,088 9,714 6,177 7,026	29,005			Total Acreage	1,840 1,953 9,790 1,058	14,641		·
Average Density (%)	59% 68% 49% 36%	54%			Average Density (%)	29% 26% 28% 27%	28%		
Cummulative River Miles	0 49 91 145	197			River Miles	22 29 40 <b>A</b> 80 40 40 40 40 40 40 40 40 40 40 40 40 40	82		
Arkansas River Main Stem	CO/KS State Line Prowers County Bent County Otero County Pueblo County to Pueblo Dam	Totals =			Related Waterways	Huerfano River Fountain Creek Arkansas Reservoirs* Arkansas Tributaries***	= Siaio		

\*Arkansas Reservoirs include: Lake Meredith, Adobe Creek Res., Neeskah Res., Neenoshe Res., and Sheridan Lake \*\*Arkansas Tributaries include: Big Sandy Creek and Buffalo Creek

### Assumptions:

Current Water Loss = (Average tamarisk density)(0.75)(CW acreage)(4.35 - 1.0 feet/year)(Total acreage) + (Average tamarisk density)(1.0 - CW acreage)(4.35 - 1.0 feet/year)(Total acreage)

Future Water Loss = (0.75)(CW acreage)(4.35 - 1.0 feet/year)(Total acreage) + (1.0 - CW arerage)(4.35 - 1.0 feet/year)(Total acreage)

\*\*\*Costs are based on detailed cost information found in Options for Non-Native Phreatophyte Control, March 2006, Tamarisk Coalition

Cottonwood/Willow plant community (CW) will use approximately the same water/year as tamarisk @ 4.35 feet/year
 Of the area capable of supporting CW vegetation, 25% will actually be occupied based on research evidence.
 Areas that will not support CW vegetation, plants will be xeric in nature; e.g., dryland grasses, sage, shrubs, which use only water derived through precipitation
 Dryland vegetation water use within study area is estimated to equal average precipitation of approximately 1.0 feet of water/year per NOAA and USDA-NRCS data (1961-1990).
 Future water loss assumes infilling of tamarisk at 100% with no expansion of range

Arkansas Table 3: Arkansas River & Tributaries - Tamarisk Infestation Attribute Data

Acreage   Age Status   Access   Avg Height (m)	California (Core)         Acreage         Upland         Acreage         Acreage         Upland         Acreage         Acreage         Acreage         Upland         Acreage		Photo Reference			
60.34 60.34 60.34 60.34 60.34 60.34 60.34 60.34 60.34 60.36 60.6 60.7 60.6 60.7 60.7 60.7 60.7 60.	60.34 114.52 mature 98.06 mature 78.86 mature 136.86 mature 136.86 mature 101.05 mature 101.05 mature 101.05 mature 65.79 mature 52.76 mature 134.23 mature 134.23 mature 134.23 mature 134.23 mature 134.23 mature 134.23 mature 151.14 mature 151.14 mature 153.60 mature 153.77 mature 153.77 mature 14.13 mature 15.21 mature 14.13 mature 14.14 mature 14.15 mature 14.15 mature 14.16 mature 14.17 mature 14.18 mature 14.19 mature 17.00 mature 18.00 mature 17.00 mature 18.70 mature 18.70 mature	Access Avg Height (m)		Cottonwood	Willow	Russian Olive
60.34 good** 60.34 mature good 2 2 p p np 61.14.22 mature good 4,5 5 p p np 11.14.22 mature good 4,5 5 p p np 11.14.22 mature good 4,5 5 p p np 11.14.22 mature good 11.1.12 np np np 11.14.22 mature good 11.1.12 np np np 11.14.23 mature good 11.1.12 np np np 11.14.23 mature good 11.14.2 np np np 11.14.23 mature good 11.14.2 np np np 11.14.23 mature good 11.14.2 np np np 11.14.2 np np np np 11.14.2 np	60.34 114.52 mature 98.06 mature 136.86 mature 14.240 mature 191.28 mature 101.05 mature 65.79 mature 65.79 mature 52.76 mature 119.09 mature 1242.56 mature 1242.56 mature 13.36.71 mature 14.13 mature 15.96 mature 17.76 mature 17.76 mature 17.50 mature 17.53 mature 17.53 mature 17.53 mature 17.53 mature 18.70 mature 18.70 mature 18.70 mature			liesaid		
144.25 mature good 2 p p pp 176.86.86 mature good 3 p p p p 176.86.80 mature good 3 p p p p p p p p p p p p p p p p p p	60.34 114.52 mature 98.06 mature 76.86 mature 136.86 mature 142.40 mature 141.240 mature 101.05 mature 65.78 mature 65.79 mature 134.23 mature 134.23 mature 134.23 mature 119.09 mature 113.56 mature 113.56 mature 113.56 mature 113.56 mature 113.56 mature 1242.56 mature 1242.56 mature 13.36.71 mature 14.13 mature 15.44 mature 16.74 mature 17.6 mature 17.76 mature 17.6 mature 17.76 mature 17.76 mature 17.76 mature 17.76 mature 17.76 mature 17.75 mature 18.70 mature 18.70 mature	*,pood				
114.52         malure         good         2         p         np           1.6.66         malure         good         2         p         np           1.6.66         malure         good         4,5         p         p         p           1.6.68         malure         good         4,5         p         p         p           1.6.68         malure         good         4,5         p         p         p           8.1.82         malure         good         9         np         p         p         p           8.1.32         malure         good         11,12         np         np         np         <	98.06 mature 76.86 mature 136.86 mature 136.86 mature 142.40 mature 101.05 mature 101.05 mature 65.79 mature 65.79 mature 134.23 mature 52.76 mature 134.23 mature 134.23 mature 119.09 mature 119.09 mature 113.56 mature 12.21 mature 13.57 mature 13.57 mature 14.13 mature 15.14 mature 15.14 mature 14.13 mature 14.14 mature 15.14 mature 16.74 mature 16.74 mature 16.34 mature 17.56 mature 17.56 mature 17.56 mature 17.53 mature 17.53 mature 17.53 mature 18.70 mature	**boog	-			
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40         51.85         mature         good         9         P           60         101.15         mature         good         11,12         np         p           60         64.79         mature         good         11,12         np         np           60         65.79         mature         good         114         np         np           40         58.27         mature         good         16,19         p         np           50         57.79         mature         good         16,19         p         np           40         184.23         mature         good         22,23         p         p         p           40         113.69         mature         good         22,23         p         p         p           40         179.15         mature         good         22,23         p         p         p           40         179.6         mature         good         22,23         p         p         p           40         179.6         mature         good         22,23         p         p         p           50         173.6         mature         good	40         51.85         makine           50         39.37         immature           60         101.05         mature           50         65.79         mature           50         65.79         mature           50         52.76         mature           50         27.8.53         mature           50         27.8.53         mature           40         119.09         mature           40         119.09         mature           50         248.87         mature           50         113.56         mature           50         13.71         mature           80         23.61.03           3.361.03         mature           80         24.25         mature           50         86.68         mature	pood	, o	2 1	₽ 1	₽ 8
50         33.77         Immature         900d         11,12         np         np           50         101.05         mature         900d         11,12         np         np           50         58.78         mature         900d         11,12         np         np           40         58.80         mature         900d         14,19         np         np           50         134.22         mature         900d         16,19         p         np           50         13.82         mature         900d         21         p         np         np           40         119.00         mature         900d         21         p         np         np         np           40         119.00         mature         900d         21         p	50         39.37         immature           60         101.05         immature           50         84.79         mature           50         65.79         mature           50         53.03         mature           40         65.79         mature           50         57.75         mature           40         134.23         mature           40         14.8.37         mature           40         113.09         mature           50         15.14         mature           50         15.14         mature           50         13.14         mature           50         113.56         mature           50         113.56         mature           50         113.56         mature           50         68.74         mature           50         65.74         mature           80         28.59         mature           50         28.59         mature           50         28.4.21         mature           50         28.4.21         mature           50         44.23         mature           50         86.68 <td></td> <td><b>o</b> 0</td> <td><del>2</del> :</td> <td>a. ¦</td> <td><u>-</u> 8</td>		<b>o</b> 0	<del>2</del> :	a. ¦	<u>-</u> 8
6.0         191,05         makute         good         11,12         np         np           6.0         63,73         makure         good         11,12         np         np           6.0         63,73         makure         good         11,12         np         np           4.0         58,30         makure         good         11,12         np         np           5.0         134,23         makure         good         20         pp         pp           4.0         18,93         makure         good         22         pp         pp           4.0         18,13         makure         good         22         pp         pp           5.0         1,274         makure         good         22,23         pp         pp           5.0         1,224         makure         good         22,23         pp         pp           5.0         1,224         makure         good         25         pp         pp           5.0         1,224         makure         good         25         pp         pp           5.0         1,234         makure         good         25         pp         pp </td <td>60 101.05 mature 50 84.79 mature 70 53.03 mature 60.65.79 mature 50 65.79 mature 50 134.23 mature 50 278.53 mature 60 278.53 mature 40 119.09 mature 60 73.15.14 mature 50 73.15.14 mature 50 73.15.14 mature 50 13.72 mature 50 242.56 mature 50 13.72 mature 50 242.56 mature 50 13.72 mature 60.79.15 mature 60.79.15 mature 60.79.15 mature 60.79.15 mature 60.79.16 mature 60.79.16 mature 60.79.17 mature 60.70 68.37 mature 60.70 mature 60.72.1.11 60.72.53 mature 60.72.54.70 mature 60.72.53 mature 60.72.54.70 mature 60.72.53 mature 60.72.54.70 mature 60.72.53 mature 60.72.54.70 mature 60.72.54.70 mature 60.72.54.70 mature 60.72.54.70 mature 60.72.70 mature</td> <td></td> <td>ت</td> <td>2</td> <td>윤 :</td> <td><del>2</del> 1</td>	60 101.05 mature 50 84.79 mature 70 53.03 mature 60.65.79 mature 50 65.79 mature 50 134.23 mature 50 278.53 mature 60 278.53 mature 40 119.09 mature 60 73.15.14 mature 50 73.15.14 mature 50 73.15.14 mature 50 13.72 mature 50 242.56 mature 50 13.72 mature 50 242.56 mature 50 13.72 mature 60.79.15 mature 60.79.15 mature 60.79.15 mature 60.79.15 mature 60.79.16 mature 60.79.16 mature 60.79.17 mature 60.70 68.37 mature 60.70 mature 60.72.1.11 60.72.53 mature 60.72.54.70 mature 60.72.53 mature 60.72.54.70 mature 60.72.53 mature 60.72.54.70 mature 60.72.53 mature 60.72.54.70 mature 60.72.54.70 mature 60.72.54.70 mature 60.72.54.70 mature 60.72.70 mature		ت	2	윤 :	<del>2</del> 1
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7.0         53.03         mature         good         15         np         np           4.0         53.03         mature         good         13         p         np         np           4.0         55.27         mature         good         14         np         np         np           5.0         154.53         mature         good         16         p         p         p         np           4.0         149.53         mature         good         20         p	70 53.03 mature 60 65.79 mature 40 58.80 mature 50 22.76 mature 50 22.76 mature 40 119.09 mature 40 119.09 mature 40 7248.87 mature 50 151.14 mature 50 153.71 mature 50 153.71 mature 50 153.71 mature 50 153.71 mature 50 14.13 mature 50 14.13 mature 50 23.57 mature 50 14.13 mature 50 14.13 mature 50 23.74 mature 60 23.57 mature 60 23.57 mature 60 23.57 mature 60 23.57 mature 60 23.59 mature 60 23.50 mature 60 33.75 mature 60 23.50 mature 60 33.75 mature 60 33.75 mature 60 33.75 mature 60 33.75 mature 60 23.59 mature 60 23.59 mature 60 23.50 mature 60 23.74 mature 60 23.74 mature 60 23.74 mature 60 86.68 mature 60 86.68 mature 60 86.68 mature 60 87.0 mature 60	poob	9	합	문	2
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\$10         58.276         makure         good         14         np         np         np           50         134.23         makure         good         16         np         np         np           50         134.23         makure         good         20         p         p         p           40         134.23         makure         good         22         p         p         p           40         13.69         makure         good         22         p         p         p           50         15.14         makure         good         22         p         p         p           50         15.14         makure         good         28         p         p         p           50         15.14         makure         good         28         p         p         p           50         113.56         makure         good         22         p         p         p           50         5.38.77         makure         good         52         p         p         p           50         65.74         makure         good         52         p         p         p     <	50         52.76         mature           40         58.80         mature           50         134.23         mature           50         278.53         mature           40         119.09         mature           40         248.87         mature           50         79.15         mature           50         12.21         mature           50         131.14         mature           50         536.71         mature           50         536.74         mature           80         38.75         mature           80         29.59         mature           80         29.59         mature           80         28.42         mature           80         28.42         mature           50         221.11         mature           50         86.68         mature           50         86.68         mature           50         87.0         mature           50         87.0         mature           50         87.0         mature           50         87.0         mature           50         87.0 <td< td=""><td>pood</td><td>13</td><td>Ġ.</td><td>윤</td><td>욘</td></td<>	pood	13	Ġ.	윤	욘
4.0         55.8.0         realtine         90od         16         np         np           50         278.53         mature         90od         18,19         p         p         p           40         119.03         mature         90od         22,23         p         p         p           40         248.87         mature         90od         22,23         p         p         p           50         242.86         mature         90od         24         p         p         p           50         172.11         mature         90od         26         p         p         p           50         112.86         mature         90od         26         p         p         p           50         112.61         mature         90od         26         p         p         p           50         112.21         mature         90od         26         p         p         p           50         112.21         mature         90od         26         p         p         p           50         112.21         mature         90od         22.53         p         p         p	40     58.80     mature       50     134.23     mature       50     278.53     mature       40     89.33     mature       40     248.87     mature       50     78.15     mature       50     12.21     mature       50     113.56     mature       50     113.72     mature       50     68.37     mature       50     65.74     mature       80     38.75     mature       80     29.59     mature       80     29.59     mature       80     28.45     mature       80     28.42     mature       50     66.87     mature       50     284.21     mature       50     86.68     mature       50     86.68     mature       50     86.68     mature       50     87.0     mature       8	pood	14	ф	2	윤
50         134,23         reature         90od         18,19         p         P           40         818,33         mature         90od         20         p         p           40         119,09         mature         90od         22,23         p         p           60         79,15         mature         90od         22,23         p         p           50         151,14         mature         90od         26         p         p           50         151,14         mature         90od         26         p         p           50         113,20         mature         90od         28         p         p           50         536,71         mature         90od         52,53         np         p           70         14,13         mature         90od         52,53         np         p           80         536,71         mature         90od         55         np         p           80         65,74         mature         90od         55         np         p           80         3361,03         mature         90od         55         np         p	50     134.23     mature       50     278.53     mature       40     89.33     mature       40     119.09     mature       50     79.15     mature       50     12.21     mature       50     113.56     mature       50     113.56     mature       50     536.71     mature       50     68.37     mature       50     65.74     mature       80     38.75     mature       80     38.75     mature       80     45.96     mature       80     22.59     mature       50     284.21     mature       50     86.68     mature       50     86.68     mature       50     86.68     mature       50     86.68     mature       50     87.0     mature       5	pood	16	슏	슏	윤
50         278.53         good**         20         P         P           40         189.33         mature         good         21         P         P         P           40         198.33         mature         good         22,23         P         P         P           50         78.15         mature         good         22         P         P         P         P           50         12.21         mature         good         25         P	50         278.53           40         19.09         mature           40         119.09         mature           60         78.15         mature           50         151.14         mature           50         151.14         mature           50         113.56         mature           50         536.71         mature           50         68.37         mature           50         65.74         mature           80         38.75         mature           80         38.75         mature           80         38.75         mature           80         28.59         mature           80         45.96         mature           80         28.59         mature           50         22.59         mature           50         22.59         mature           50         284.21         mature           50         44.23         mature           50         86.68         mature           50         80.19         mature           50         8.70         mature           50         8.70         mature	poob	18, 19	· a.	<u>a</u>	2
40         88.33         mature         good         20         p         p           40         218.09         mature         good         22,23         p         p         p           40         24.88.7         mature         good         22,23         p         p         p           50         157.14         mature         good         26         p         p         p           50         113.26         mature         good         26         p         p         p           50         113.26         mature         good         22,53         np         p           50         68.37         mature         good         54         p         p           50         68.37         mature         good         55         np         p           50         68.37         mature         good         56	40 89.33 mature 40 119.09 mature 40 248.87 mature 50 79.15 mature 50 1242.56 mature 50 151.14 mature 50 538.71 mature 70 68.37 mature 70 68.37 mature 80 38.75 mature 80 38.75 mature 80 29.59 mature 100 0.00 mature 80 28.59 mature 80 45.56 mature 80 7.76 mature 80 86.68 mature 80 86.68 mature 80 86.68 mature 80 87.0 mature	**poop				
4.0         119.09         mature         good         22,13         p         p           4.0         78.15         mature         good         22,23         p         p           3.0         242.56         mature         good         25         p         p         p           5.0         12.21         mature         good         26         p         p         p           4.0         113.56         mature         good         26         p         p         p           5.0         113.56         mature         good         28         p         p         p           5.0         13.22         mature         good         52.53         np         p         p           5.0         13.72         mature         good         52.53         np         np         p           5.0         65.74         mature         good         52         p         p         p           5.0         65.74         mature         good         56         p         p         p           5.0         65.74         mature         good         56         p         p         p	40 119.09 mature 40 248.87 mature 50 79.15 mature 50 151.14 mature 50 113.56 mature 50 138.71 mature 70 68.37 mature 70 68.37 mature 50 65.74 mature 80 38.75 mature 80 38.75 mature 80 29.59 mature 80 28.45 mature 80 28.45 mature 80 45.96 mature 80 28.45 mature 80 45.96 mature 80 28.45 mature 80 28.45 mature 80 7.76 mature 80 80 80 80 80 mature 80 7.76 mature 80 80 80 80 mature 80 80 80 80 80 mature 80 80 80 80 90 mature 80 80 80 80 90 mature 80 80 80 90 mature 80 80 90 90 mature	pood	23	۵	a	<del>C</del>
40         248.87         mature         good         22.23         p         p           80         78.15         mature         good         24         p         p         p           50         15.14         mature         good         25         p         p         p           50         15.14         mature         good         26         p         p         p           50         113.80         mature         good         25         p         p         p           50         14.13         mature         good         52,53         np         np           70         68.37         mature         good         55         np         p           50         65.74         mature         good         55         np         np           50         65.74         mature         good         56         57         np         np           80         45.96         mature         good         56         p         p         np           80         45.96         mature         good         66         p         p         np           80         45.96         mat	40 248.87 mature 50 79.15 mature 50 151.14 mature 50 12.21 mature 50 113.56 mature 50 538.71 mature 50 538.71 mature 50 68.37 mature 50 68.37 mature 50 68.37 mature 60 38.75 mature 80 38.75 mature 80 29.59 mature 80 45.96 mature 80 7.76 mature 80 44.23 mature 50 63.74 mature 80 7.76 mature 80 7.76 mature 80 7.76 mature 80 44.23 mature 50 86.88 mature 50 86.89 mature 50 86.89 mature	poop	23	. 0	. 0	2
75.15 mature good 24.  50 175.15 mature good 25.  50 15.14 mature good 25.  50 15.13 mature good 25.  50 538.71 mature good 52.53 np	60 79.15 mature 30 242.56 mature 50 151.14 mature 50 12.21 mature 50 536.71 mature 50 536.71 mature 70 68.37 mature 70 68.37 mature 80 38.75 mature 80 29.59 mature 80 29.59 mature 80 7.76 mature 80 45.96 mature 80 44.29 mature 80 7.76 mature 80 65.74 mature 80 38.74 mature 80 7.76 mature 80 7.76 mature 80 7.76 mature 80 68.37 mature 80 7.76 mature 80 86.68 mature 80 88.68 mature 80 88.68 mature 80 88.70 mature 80 88.68 mature 80 88.68 mature 80 88.70 mature 80 87.00 mature 80 87.00 mature	noon poor	22 23	. c	. c	- 2
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20         157.14         mature good*         26         p         p         p           50         12.21         mature good*         26         p         p         p           50         13.21         mature good*         26         p         p         p           50         68.37         mature good         52.53         np         np           70         68.37         mature good         56         p         p           50         65.74         mature good         56         p         p           50         65.74         mature good         58         p         np           80         23.75         mature good         58         p         np           80         45.96         mature good         56         p         np           80         45.96         mature good         66         p         p           80         45.96         mature good         66         p         p           80         45.96         mature good         66         p         p           80         44.23         mature good         66         p         p           80         <	20 151.14 mature 50 151.14 mature 50 1536.71  3,361.03  70 68.37 mature 70 68.37 mature 50 65.74 mature 80 38.75 mature 100 0.00 mature 80 7.76 mature 80 28.59 mature 80 7.76 mature 80 45.96 mature 80 7.56 sature 90 86.68 mature 50 86.68 mature	noop poor	: %	2.0		÷ c
50         12.21         mature         poor         28         p         p           40         113.56         mature         poor         28         p         p           50         68.37         mature         good**         52,53         np         np           70         14.13         mature         good         55         np         np           50         65.74         mature         good         56         p         np           50         13.72         mature         good         56         p         np           80         13.72         mature         good         56         p         np           80         45.96         mature         good         56         p         np           80         7.76         mature         good         66         p         p           80         7.76         mature         good         62.63         p         p           80         7.75         mature         good         66         p         p           80         7.25         mature         good         66         p         p           80 <t< td=""><td>50 12.21 mature 50 536.71 mature 50 68.37 mature 70 68.37 mature 50 65.74 mature 50 65.74 mature 80 38.75 mature 100 0.00 mature 80 45.96 mature 80 45.96 mature 80 44.29 mature 80 7.76 mature 80 7.76 mature 80 7.75 mature 80 7.50 mature 50 63.74 mature 50 63.74 mature 50 86.68 mature 50 88.68 mature 50 88.70 mature</td><td>5000</td><td>£</td><td>. c</td><td>. 6</td><td>. 2</td></t<>	50 12.21 mature 50 536.71 mature 50 68.37 mature 70 68.37 mature 50 65.74 mature 50 65.74 mature 80 38.75 mature 100 0.00 mature 80 45.96 mature 80 45.96 mature 80 44.29 mature 80 7.76 mature 80 7.76 mature 80 7.75 mature 80 7.50 mature 50 63.74 mature 50 63.74 mature 50 86.68 mature 50 88.68 mature 50 88.70 mature	5000	£	. c	. 6	. 2
50         1.2.51         mature         pood         28         p         p           50         538.71         mature         good**         52,53         rp         p           70         68.37         mature         good         52,53         rp         rp           70         14.13         mature         good         55         rp         rp           50         65.74         mature         good         56,57         rp         rp           80         29.59         mature         good         56,57         rp         rp           80         29.59         mature         good         66         rp         rp           80         45.96         mature         good         66         rp         rp           80         45.96         mature         good         62,63         rp         rp	3,361.03  3,361.03  70 68.37 mature 70 68.37 mature 50 65.74 mature 80 29.59 mature 100 0.00 mature 100 0.00 mature 80 45.96 mature 80 7.76 mature 80 44.29 mature 80 7.75 mature 80 7.76 mature 80 7.75 mature 80 58.96 mature 80 7.75 mature 80 7.75 mature 80 7.75 mature 80 7.76 mature 80 7.75 mature 80 7.75 mature 80 7.76 mature 90 80.874 mature 90 80.19 mature 90 80.19 mature 90 82.11	**************************************	ì	<b>L</b>	L	•
50         538.71         mature         good**         70         68.37         mature         good**         70         68.37         mature         good**         52, 53         np         np         np           70         14.13         mature         good**         55         np         np         np           50         65.74         mature         good**         56         57         np         np           80         38.75         mature         good**         56         57         np         np           80         28.59         mature         good         56         p         p         p           80         45.96         mature         good         66         p         np         np           80         45.96         mature         good         65         61         np         np           80         14.89         mature         good         62         63         p         np           80         224.21         good**         good**         66         p         p         p           50         66.83         mature         good**         p         p         p	3,367.1 mature 3,367.1 mature 70 68.37 mature 70 14.13 mature 80 29.59 mature 80 29.59 mature 80 45.96 mature 80 7.76 mature 80 28.4.21 80 7.76 mature 80 7.76 mature 80 7.56 mature 80 86.68 mature 90 86.68 mature	noon a	28	c	c	c
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7.0       68.37       mature       good       52,53       np       np         7.0       14.13       mature       good       54       np       np         5.0       65.74       mature       good       55       np       np         5.0       13.72       mature       good       56       p       np         80       29.59       mature       good       56       p       np         100       0.00       mature       good       56       p       np         80       45.96       mature       good       60       np       np         80       45.96       mature       good       62       63       p       np         80       45.96       mature       good       66       np       np         80       224.21       good       62       63       p       p         50       221.11       good       62       63       p       p         50       63.74       mature       good       69       p       p       p         50       72.53       mature       good       66       p       p       p	3,361,03  70 68.37 mature 70 14.13 mature 50 65.74 mature 50 38.75 mature 80 29.59 mature 100 0.00 mature 80 45.96 mature 80 7.76 mature 80 7.24.21 50 221.11 50 86.68 mature					:
70         68.37         mature         good         52,53         np         np           50         14.13         mature         good         54         np         np           50         65.74         mature         good         55         np         np           80         38.75         mature         good         56,57         np         p           80         29.59         mature         good         66         p         p         np           80         29.59         mature         good         66         p         p         np           80         7.76         mature         good         61         np         np           80         221.11         good***         62,63         np         np           50         224.21         good***         62,63         np         np           50         44.23         mature         good***         62,63         np         np           50         46.83         mature         good****         69         p         p         p           50         86.83         mature         good***         66         p         p	70 68.37 mature 50 65.74 mature 50 65.74 mature 50 38.75 mature 80 29.59 mature 100 0.00 mature 80 45.96 mature 80 7.76 mature 50 284.21 50 63.74 mature 50 63.74 50 63.74 50 63.74 50 86.68 mature 50 86.68 mature 50 86.68 mature 50 87.07 50 84.23 mature 50 86.68 mature 50 88.68 mature 50 88.70 mature 50 87.75 mature 50 88.70 mature 50 87.75 mature	A CONTRACT OF THE PROPERTY OF				
60         136,74         70         68,37         mature         good         52,53         np         np           80         16,17         mature         good         55,63         np         np         np           70         16,13         mature         good         56         70         np	60         136.74         70         68.37         mature           80         37.67         70         14.13         mature           80         19.54         50         13.72         mature           70         19.20         50         13.72         mature           80         118.36         80         29.59         mature           10         23.54         100         0.00         mature           80         183.82         80         14.89         mature           80         19.39         80         7.76         mature           60         246.53         80         7.76         mature           60         266.33         50         284.21         mature           80         70.198         50         221.11         mature           80         70.76         50         86.68         mature           70         111.26         50         86.68         mature           70         112.26         50         80.19         mature           70         127.71         70         mature           70         147.23         70         mature					
80         37.67         70         14.13         mature         good         54         np         np           80         195.18         50         65.74         mature         good         55         np         np           70         19.20         50         13.75         mature         good         56         p         p           80         118.36         80         28.59         mature         good         56         57         np         p           80         118.36         80         45.96         mature         good         60         np         np           80         19.39         80         14.89         mature         good         61         np         np           60         19.39         80         14.89         mature         good         62,63         np         np           60         286.53         50         284.21         good         62,63         np         np           80         101.98         50         63.74         mature         good         62,63         np         np           80         101.54         50         86.68         mature         good<	80         37.67         70         14.13         mature           80         105.18         50         65.74         mature           70         19.20         50         65.74         mature           30         58.12         80         65.74         mature           80         118.36         80         29.59         mature           10         23.54         100         0.00         mature           80         183.82         80         45.96         mature           80         19.39         80         7.76         mature           80         284.21         mature         7.76         mature           80         101.98         50         284.21         mature           80         70.76         50         86.68         mature           70         111.26         50         86.68         mature           70         112.26         50         87.0         mature           70         127.71         70         mature           70         140.73         70         87.0         mature           70         140.73         70         84.73         mature	pood	52, 53	du	윤	a.
80         165.18         50         65.74         mature         good***         55         np         p           70         19.20         50         13.72         mature         good***         58         p         p           80         118.36         80         29.59         mature         good         58         p         p           10         23.54         100         0.00         mature         good         56         57         np         p           80         18.38         80         14.89         mature         good         62         60         np         np         np           80         19.39         80         7.76         mature         good         62         63         np         np         np           60         29.53         50         22.11         good***         62         63         p         p         p           80         101.98         50         63.74         mature         good***         70         p         p           80         101.64         50         72.53         mature         good         66         p         p           70 <td>80         105.18         50         65.74         mature           70         19.20         50         13.72         mature           80         118.20         80         29.59         mature           80         118.382         80         29.59         mature           80         183.82         80         45.96         mature           80         59.58         80         7.76         mature           80         341.05         80         7.76         mature           60         341.05         50         234.21         mature           80         70         44.23         mature           80         70         44.23         mature           70         111.24         50         72.53           80         112.37         80         86.68         mature           70         112.26         50         87.4         mature           70         112.26         50         87.0         mature           70         112.26         50         87.0         mature           70         145.71         70         87.0         87.0         mature           <td< td=""><td>poofi</td><td>Z</td><td>솯</td><td>2</td><td></td></td<></td>	80         105.18         50         65.74         mature           70         19.20         50         13.72         mature           80         118.20         80         29.59         mature           80         118.382         80         29.59         mature           80         183.82         80         45.96         mature           80         59.58         80         7.76         mature           80         341.05         80         7.76         mature           60         341.05         50         234.21         mature           80         70         44.23         mature           80         70         44.23         mature           70         111.24         50         72.53           80         112.37         80         86.68         mature           70         112.26         50         87.4         mature           70         112.26         50         87.0         mature           70         112.26         50         87.0         mature           70         145.71         70         87.0         87.0         mature <td< td=""><td>poofi</td><td>Z</td><td>솯</td><td>2</td><td></td></td<>	poofi	Z	솯	2	
70         19.20         50         13.72         good         59         p         P           30         158.12         80         38.75         mature         good         56,57         np         p           10         23.54         100         0.00         mature         good         56,57         np         p           80         183.82         80         45.96         mature         good         60         np         np <t< td=""><td>70         19.20         50         13.72           30         58.12         80         38.75         mature           80         118.36         80         28.59         mature           10         23.54         100         0.00         mature           80         183.82         80         45.96         mature           80         19.39         80         7.76         mature           60         34.05         50         264.21         mature           60         265.33         50         221.11         mature           80         70.76         50         44.23         mature           70         161.54         50         72.53         mature           70         167.37         80         52.46         mature           70         112.26         50         87.0         mature           70         147.71         70         94.73         mature</td><td>good</td><td>55</td><td>윤</td><td>윤</td><td>윤</td></t<>	70         19.20         50         13.72           30         58.12         80         38.75         mature           80         118.36         80         28.59         mature           10         23.54         100         0.00         mature           80         183.82         80         45.96         mature           80         19.39         80         7.76         mature           60         34.05         50         264.21         mature           60         265.33         50         221.11         mature           80         70.76         50         44.23         mature           70         161.54         50         72.53         mature           70         167.37         80         52.46         mature           70         112.26         50         87.0         mature           70         147.71         70         94.73         mature	good	55	윤	윤	윤
30         58.12         80         38.75         mature         good         56, 57         p         P           80         118.36         80         29.59         mature         good         56, 57         np         p           80         118.38         80         45.96         mature         good         61         np         np           80         18.38         80         14.89         mature         good         61         np         np           60         29.58         80         7.76         mature         good***         62, 63         np         np           60         284.21         good***         62, 63         np         np           60         284.21         good***         62, 63         np         np           80         70.76         mature         good***         70         p         p           80         101.98         50         86.68         mature         good***         70         p         p           70         112.37         80         52.46         mature         good         69         p         p         p           70         13.05         <	30         58.12         80         38.75         mature           80         118.36         80         29.59         mature           10         23.54         100         0.00         mature           80         183.54         100         0.00         mature           80         183.5         80         14.89         mature           60         341.05         50         224.21         mature           60         265.33         50         224.21         mature           80         70.76         50         44.23         mature           80         138.68         50         86.68         mature           70         1112.54         50         86.68         mature           70         112.25         50         80.19         mature           70         147.27         70         94.73         mature	,,poob				
80         118.36         80         29.59         mature         good         56,57         np         p           10         123.54         100         nature         good         56         7         np         p           80         45.96         mature         good         60         np         np         np           50         19.39         80         7.76         mature         good**         62,63         np         np           60         286.33         50         221.11         good**         70         p         np           80         70.76         50         44.23         mature         good**         69         p         p           80         101.54         50         86.68         mature         good**         69         p         p           70         117.26         50         86.68         mature         good**         66         p         p           70         112.26         50         80.19         mature         good         69         p         p         p           70         43.05         mature         good         64         p         p         <	80         118.36         80         29.59         mature           10         23.54         100         0.00         mature           80         183.82         80         45.96         mature           80         59.88         80         14.89         mature           50         19.39         80         7.76         mature           60         341.05         50         284.21         mature           80         101.98         50         63.74         mature           80         70.76         50         44.23         mature           70         111.54         50         86.68         mature           70         112.26         50         86.68         mature           70         112.26         50         80.19         mature           70         142.27         70         mature           70         142.73         70         mature	pood	ස	œ	<u>σ</u>	2
10         23.54         100         nature         good         58         p         np           80         143.82         80         45.96         mature         good         60         np         np         np           50         19.39         80         7.76         mature         good**         np         np         np           60         24.105         50         221.11         good**         np         np         np           80         70.76         50         221.11         good**         70         p         p           80         70.76         50         44.23         mature         good**         69         p         p           70         101.54         50         72.53         mature         good**         69         p         p           60         157.37         80         86.88         mature         good         66         p         p           70         117.26         50         87.10         mature         good         64         p         p           70         13.05         60         87.70         mature         good         64         p <t< td=""><td>10         23.54         100         0.00         mature           80         183.82         80         45.96         mature           80         19.38         80         7.76         mature           50         19.39         80         7.76         mature           60         246.53         50         221.11         mature           80         70.198         50         44.23         mature           70         188.68         50         86.68         mature           70         112.26         50         87.46         mature           70         112.26         50         87.4         mature           70         112.26         50         87.0         mature           70         142.77         70         mature</td><td>pood</td><td>56, 57</td><td>랍</td><td>a,</td><td>윤</td></t<>	10         23.54         100         0.00         mature           80         183.82         80         45.96         mature           80         19.38         80         7.76         mature           50         19.39         80         7.76         mature           60         246.53         50         221.11         mature           80         70.198         50         44.23         mature           70         188.68         50         86.68         mature           70         112.26         50         87.46         mature           70         112.26         50         87.4         mature           70         112.26         50         87.0         mature           70         142.77         70         mature	pood	56, 57	랍	a,	윤
80         183.82         80         45.96         mature         good         60         np         np           80         75.85         80         74.89         mature         good***         61         np         np         np           60         265.33         50         224.21         mature         good***         70         np         np           80         70.76         50         221.11         good***         70         p         p           80         70.76         50         86.68         mature         good***         69         p         p         p           70         101.54         50         72.53         mature         good***         66         p         p         p           60         157.37         80         52.46         mature         good***         66         p         p         p           70         112.26         50         80.19         mature         good         64         p         p           70         197.71         70         84.73         mature         good         63         p         p	80         183.82         80         45.96         mature           80         59.58         80         14.89         mature           60         34.05         80         7.76         mature           60         266.33         50         224.21         mature           80         101.98         50         221.11         mature           80         70.76         50         44.23         mature           70         113.64         50         72.53         mature           60         112.26         50         80.19         mature           70         112.26         50         8.70         mature           70         197.71         70         94.73         mature	poofi	28	a.	2	<u>2</u> .
80         59.58         80         14.89         mature         good         61         np         np           60         341.05         50         224.11         good***         62,63         np         np           60         226.33         50         221.11         good***         np         np         np           80         101.98         50         63.74         good***         70         p         p         p           80         101.54         50         86.68         mature         good***         66         p         p         p           70         117.26         50         87.53         mature         good***         66         p         p         p           70         13.05         50         80.19         mature         good         65         p         p         p           70         13.05         50         87.0         mature         good         65         p         p         p           70         147.71         70         84.73         mature         good         64         p         p         p           70         149.73         p         p	80         59.58         80         14.89         mature           50         19.39         80         7.76         mature           60         341.05         50         284.21         mature           60         265.33         50         284.21         mature           80         101.86         50         44.23         mature           80         138.68         50         86.68         mature           70         101.54         50         72.53         mature           70         112.26         50         80.19         mature           70         132.6         50         87.0         mature           70         132.71         70         84.73         mature	good	99	완	윤	Qi.
50         19.39         80         7.76         mature         good**         62, 63         np         np         np           60         284.21         50         224.21         good**         np         np         np         np         np           80         101.98         50         621.11         good**         70         p         p         p           80         70.76         50         44.23         mature         good**         69         p         p         p           70         101.54         50         86.68         mature         good**         66         p         p         p           60         127.37         80         52.46         mature         good**         66         p         p         p           70         112.26         50         80.19         mature         good         64         p         p           70         197.71         70         84.73         mature         good         63         p         p	50         19.39         80         7.76         mature           60         341.05         50         284.21         mature           60         265.33         50         284.21         mature           80         101.98         50         63.74         mature           80         70.76         50         86.68         mature           70         101.54         50         86.68         mature           70         1172.37         80         52.46         mature           70         112.26         50         80.19         mature           70         197.71         70         84.73         mature	poof	61	욘	윤	윤
60         341.05         50         284.21         good**         good**           60         226.33         50         221.11         good**         P           80         70.76         50         44.23         mature         poor         70         p         p           70         101.54         50         86.68         mature         good**         66         p         p           60         117.37         80         52.46         mature         good         66         p         p           70         117.26         50         80.19         mature         good         65         p         p           70         13.05         50         87.70         mature         good         64         p         p           70         197.71         70         84.73         mature         good         63         p         p	60         34.05         50         284.21           60         265.33         50         221.11           80         101.98         50         621.11           80         70.76         50         44.23         mature           70         101.54         50         86.68         mature           70         112.26         50         80.19         mature           70         112.26         50         87.0         mature           70         197.71         70         94.73         mature	poof	62, 63	윤	윤	윤
60         265.33         50         221.11         good***         good***           80         707.66         50         44.23         mature         poor         70         p         p           80         138.68         50         44.23         mature         good**         69         p         p         p           70         101.54         50         72.53         mature         good**         66         p         p         p           60         157.37         80         52.46         mature         good         66         p         p         p           70         13.05         50         87.0         mature         good         65         p         p         p           70         197.71         70         84.73         mature         good         63         p         p         p	60         266.33         50         221.11           80         101.98         50         63.74           80         70.76         50         44.23         mature           70         101.54         50         72.53         mature           60         157.37         80         52.46         mature           70         112.26         50         87.0         mature           70         197.71         70         94.73         mature	*,poof				
80         101.98         50         63.74         good***         70         p         p           80         138.68         50         44.23         mature         good***         69         p         p         p           70         101.54         50         72.53         mature         good***         66         p         p         p           60         157.37         80         52.46         mature         good         65         p         p         p           70         13.05         50         87.0         mature         good         64         p         p         np           70         197.71         70         84.73         mature         good         63         p         p         p	80         101.98         50         63.74           80         70.76         50         44.23         mature           80         138.68         50         86.68         mature           70         101.54         50         72.53         mature           70         112.87         80         52.46         mature           75         13.05         50         80.19         mature           70         197.71         70         84.73         mature	**poog				
80         70.76         50         44.23 mature poor poor         70         70         70         70         70         70         70         70         70         70         70         70         70         70         71.53         90         5.24         mature good         66         70 <td>80         70.76         50         44.23         mature           80         138.68         50         86.68         mature           70         101.54         50         72.53         mature           60         157.37         80         54.6         mature           70         112.66         50         80.19         mature           70         143.05         50         8.70         mature           70         1497.71         70         84.73         mature</td> <td>**poofi</td> <td></td> <td></td> <td></td> <td></td>	80         70.76         50         44.23         mature           80         138.68         50         86.68         mature           70         101.54         50         72.53         mature           60         157.37         80         54.6         mature           70         112.66         50         80.19         mature           70         143.05         50         8.70         mature           70         1497.71         70         84.73         mature	**poofi				
80         138.68         50         86.68         mature         good**         69         p         p         p           70         161.54         50         72.53         mature         good**         66         p         p         p           70         112.26         50         8.70         mature         good         65         p         p         p           75         13.05         50         8.70         mature         good         64         p         np           70         197.71         70         84.73         mature         good         63         p         p	80         138.68         50         86.68         mature           70         101.54         50         72.53         mature           60         157.37         80         52.46         mature           70         112.65         50         80.19         mature           70         13.05         50         8.70         mature           70         197.71         70         84.73         mature	poor	2	a.	۵	α.
70         101.54         50         72.53         good***         66         p         p         p           60         147.37         80         52.46         mature         good         66         p         p         p           70         112.26         50         80.19         mature         good         64         p         np           70         197.71         70         84.73         mature         good         63         p         p	70         101.54         50         72.53           60         157.37         80         52.46         mature           70         112.26         50         80.19         mature           75         13.05         50         8.70         mature           70         197.71         70         84.73         mature	poof	69	c.	a.	D.
60 157.37 80 52.46 mature good 66 p p p 70 172.26 50 80.19 mature good 65 p p p 75 13.05 50 8.70 mature good 63 p p np 70 197.71 70 84.73 mature good 63 p p	60 157.37 80 52.46 mature 70 112.26 50 80.19 mature 75 13.05 50 8.70 mature 70 197.71 70 84.73 mature	poof				
70 112.26 <b>50</b> 80.19 mature good 65 p p p 75 13.05 <b>50</b> 87.0 mature good 64 p p np 70 197.71 70 84.73 mature good 63 p p	70 112.26 <b>50</b> 80.19 mature 75 13.05 <b>50</b> 8.70 mature 70 197.71 70 84.73 mature	poob	99	<b>a</b>	Ċ.	멑
75 13.05 <b>50</b> 8.70 mature good 64 p np 70 197.71 70 84.73 mature good 63 p p	75 13.05 <b>50</b> 8.70 mature 70 197.71 70 84.73 mature	poof	65	α.	c.	윤
70 197.71 70 84.73 mature good 63 p p	70 197.71 70 84.73 mature	poob	25	a	2	2
		poob	63	Δ.	a	a.

Arkansas Table 3: Arkansas River & Tributaries - Tamarisk Infestation Attribute Data

Cottonwood Willow Russian Olive present (p)/not present (np)																													ďυ	g				du du d	1	<b>3.</b> C	<b>.</b> 0	du du	۰۵	a	du	,	or {	de de de	<u>.</u>
Photo Reference Number Cott																													29	) 9 / 9	88			97	e c	0 &	9	101	102	401	105		900	108	<b>&gt;</b>
Access Avg Height (m)	**poo6	poob.	**poob	Bood.	good	good	**	**poop	**poob	pood.	good	**poop	**pood	good	nood:	apood	**poob	good**	pood**	good**	a.pood	bood		pood:	good:	** pood	, poob	**poop	poot	pood	poop			pood	good	0000	2000	pood	pood	pood	poof	good.	pood	good	NOOF .
Riparian Acreage Age Status	250.49	211,29	40.97	114.81	27.31	5.87	04.8/ 04.47	38.03	43.66	173.41	232.00	57.24	66.97	233.10	24.48 104.48	67.91	124.55	92.07	49.41	160.98	12.68	57,69	37,61	11.06	73.68	3.50	5.11				0.00 mature	4,181.06		161.47 mature	53.42	109.00 mature 82.98 mature				95,86 mature	21.54 mature			17.47 mature 97.94 mature	
Percent Upland								. G											٠								20		<b>8</b>		9 6	4		5 5											
Canopy Coverage	350.68	295.80	65,55	160.74	38.23	9.40	46.90	41.37 53.25	69.86	277.46	371.21	91,59	107.14	372.96	34.27	95.07	174.37	128.90	69.17	225.37	17.75	80.77	60.18	17.72	28.42	4.90	6.13	334.95	89.56	33.05	200.03 0.17	6,593.24		322.94	64.11	109.80	47.68	89.71	69.32	47.93	183.05	97.38	93.29	13.98	20.00
Percent Cover	0/	0.2	80	70	70	80	2 8	2 5	: &	. 08	80	80	80	80	2 %	2.02	2.02	02	70	20	20	20	Q 6	2 8	6 6	2 2	90	20	8	8 8	2 2			<del>0</del>	96	8 &	3 8	75	40	25	85	2 3	G (	94 4	3
e Name Acreage	500.97							8 08.94 9 76.07			12 464 01				16 48.96									22.15							16 0.21	otal 9,713.94	Main Stem Arkansas: Otero County			21.8.1.2								34.95	
Reference Name	i	Ē	, im3	jm4	jm5	gui	/uuf	ami emi	Omi Oturi	im11	jm12	jm13	Jm14	imi	Jm16	9114 85mi		im2	jm21	jm22	jm23	jm24	jm25	ozmi rc∞i	/2mj	im29	0Emi	Jm31	b1-15	7-15	01-10 61-16	Subtotal	Main Stem	01-1	. g	0-1-0 0-1-0	2 6	01-5	01-6	01-7	01-8	ge '	0-10 1	01-11	5

Arkansas Table 3: Arkansas River & Tributaries - Tamarisk Infestation Attribute Data

		•	Cano	Percent	Riparian				Photo Reference			C. Signatura
Reference Name	Acreage	Percent Cover	Acreage	Opland	Acreage	Age Status	Access	Access Avg Height im)	MUIDO	Cotton wood		D/not present (np)
ŗ	300	Ą	101.43	Ş	112 69		**poop					
97	223.30	? ?	30.82	3 8	123.29	mature	pood		110	۵	2	2
01-12	174.11	2 5	11.03	î &	55 16	immature	podo		111	. 🗅	a	٥
01-13	160.32	2 Ç	8.03 84.08	8 4	90.85	matrine	good		113	. a	۵	0.
#150	1000	2 5	240 73	2 2	171 95	mature	poor		115	. a	. 0	α.
01-10	245.30	2 6	240:13	8 2	36.84	mature	poop		116	. 0	. 0.	. c.
01-10	276.49	3 %	207.37	3 2	138.24	mature	poop		117	. съ	. 0.	<b>a</b> .
-1-10	480.43	. c	240.21	8 2	240.21	mature	poor		119	. 🙃	. <b>c</b> .	. <b>c</b> .
C 07	400.43	Q7	197 00	30	246.25		pood					
5 7 7	120.55	2 6	35.53	č.	64.82	mature	good		120	•	۵	Ċ.
01-19	228.03	82 0	01.37	S &	114.22	mature	pood		122	. 🗅	. a	ο.
07-10	250.44	2 6	104.43	3 2	130 53	anther	poor		122	. 0	٥	. 🗅
02-10	201.07	₽ 6	25.43	8 2	05 36	makara	1000		124	. c	2	. α
01-21	317.00	0.4	117 11		146.38	mature	pood o		125	. 0	† a	. 02
01-23	133,73	20	66.87	4	80.24	mature	good		126	. 02.	. a	윤
			77 070		00 FCG C				**************************************	HARVE STATE OF THE PARTY OF THE		
Subfolai	9,111.32		\$1.010°C		7,02,1.00							
Main Stem Arkansas: Otero County Line to Pueblo Reservoir Dam	: Otero Cou	inty Line to Pue.	blo Reservoir Dam									
pu1-2	6.31	5	0.32	20	3,15	mature	poofi		31	Δ.	œ.	a.
pu1-3	5.20	20	1.04	40	3.12	immature	boob		33	ca.	O.	o.
pu1-4	32.59	10	3.26	S S	16.30	mature	pood		35	Δ.	a	Ω.
pu1-5	13.06	15	1.96	20	6.53	mature	pooti		36	D.	a.	a
pu2-20	26.66	9	2.67	70	8.00	mature	poofi		126	a	œ.	a.
pu2-22	1.70	ß	60'0	99	0.85	mature	good		128	a.	Q.	a.
pu2-21	3.37	10	0.34	90	1.68	mature	poor		127	Q.	a	a.
pu2-23	1.26	ιΩ	0.06	20	0.63	immature	good		129	۵.	a	CL.
pu2-24	6.85	20	1.37	ନ୍ଧ	3.43	mature	poofi		130	۵.	ο.	a.
pu2-25	10.26	50	2.05	100	0.00	mature	pood	-	130	α.	C.	œ.
pu2-31	94.70	40	37.88	70	28.41	immature	paob		143	α.	윤	<del>2</del> -
pu2-30	189.75	15	28.46	30	132.83	mature	poog		142	a.	<u>e</u>	a.
<u>a</u>	385.13	15	57.77	<b>9</b>	192.57		pood		!	۵		1
pu2-26	332.11	10	33.21	02 20	265.69	mature	good		13/	۵	a.	a.
pu1-18	176.01	23	35.20	33 (	88.01	mature	bood		171	α.	<b>a</b> ;	<b>.</b>
pu1-17	490.98	Q (	196,39	g :	195.39	mature	bood		971	α. (	₽.	
70	91.67	3 \$	30.67	<b>2</b>	738 77	on the co	0000		ά+,	a. c	c	c
01-100	10.77	<b>?</b>	191,02	3 6	120.17	andem andem	900		2 2	a. c	<b>.</b>	<b>.</b> c
24 1 mg	4 320 BE	2 6	F1 73C	8 6	R60 42	e de la company	5000		102	<b>.</b> C	L C	. c
2 5 5 5	318.95	3 4	127.58	8 6	159.48				!	LΩ	L	L
Ca14-14	542 63	9	325 58	2 2	162.79	mature	pood		101	. 🗅	8	Q.
pu1-13	382.10	02	267.47	8	76.42	mature	poop		100	. 0	·a	- <del>2</del>
cu1-14	305.85	: 09	183.51	2	91.75	mature	poop		101	. 0.	. C	<u>a</u>
pu1-12	245.89	8	73.77	20	122.95	mature	pood		66	. 🙃	. с.	o.
pu1-9	353.20	20	176.60	90	176.60	mature	pood		96	. <b>c</b> .	O.	Q.
pu1-10	92.81	40	37.12	02	27.84	mature	poot		26	Q.	a.	α.
pu1-11	316.78	40	126.71	20	158.39	mature	boob		86	D.	Q.	œ.
46	238.08	40	95.23	20	119.04		poofi			a		
pu1-7	154.18	40	61.67	70	46.25	mature	boob		93	α.	C.	<u>-</u>
a9	151.42	50	75.71	20	75.71		:pood					
Contract of the Contract of th					00 000 0	***************************************		***************************************				
Subtotal	7,026.24		2,544.61		3,238.00							

Arkansas Table 3; Arkansas River & Tributaries - Tamarisk Infestation Attribute Data

		<b>4</b> ;	Canopy Coverage	Percent	ercent Riparian	11ai 163 - 1 ai	1011011	A THE STATE OF THE	Photo Reference			
Reference Name	Acreage	Percent Cover		Upland	Acreage	Age Status		Access Avg Height (m)	Number	Cottonwood Willow Russian Olive present (p)/not present (np)	present (p)/not present (np)	ussian Olive ent (np)
Arkansas River Total	29,005.09		15,765.14		13,602.09							
				s *	_					÷		
Arkansas Related Waterways	aterways											
Huerfano River												
11-11	200.80	99	120.48	30	140.56	mature	poop		116	ď	۵	a.
a22	122.19	50	61.09	20	61.09		*poo6		;			
h1-10	34.55	40	13.82	100	00.00	mature	poob		115	문	2	
h13	174.65	0	0.00	00	87.33	immature	poofi		106	α.	2	;
2-1-2-1-2-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	59.68	50	11.94	5.	14.92	mature	poofi		50,	ο ι	a. į	2
n1-6	125.66	2 2	62.83	2 5	37.70	mature	1000		111	<b>a</b> . c	<u>.</u>	c
7-10	143.54	2 6	10.73	<b>3</b> 5	0.00	immafure	0000		112	÷ 2	7 5	1
2 4	176.45	51	26.47	S	88.22	mature	pood	-	<u>+</u>	<del>}</del> a	<u>.</u>	a
a23	64.77	2 8	12.95	26	32.38		poob			L	L	•
7 5	21.12		0.21	75	5.28	immature	poofi		107	α.	α.	Φ.
h14	3.50	~	0.04	75	98.0	immature	pooß		107	Ω.	a.	α.
h1-2	3.08	0	0.00	20	75	immature	poofi		105	d	2	
h1-2	272.82	0	0.00	20	136.41	immature	pood		105	a.	욘	
h1-1	341.24	20	170.62	8	68.25	matrine	pood		50.	<u>a</u>	2	
h1-1	1.76	20	0.88	80	0.35	mature	good		20.	a.	<del>2</del>	
Subtotal	1,839.79		528.83		721.90					The state of the s		**************************************
Fountain Creek												
1.1	85.17	40	34.07	20	42.58		good					
f1-2	22.64	10	2.26	S S	11.32		pood					
. T	52.64	30	15.79	20	26.32		pood					
4 6	63.74	15	9.56	90	31.86		boob		į,	ı	ļ	ţ
Ç 3	170,00	₹ 8	34.00	S <	3.45	mature	Good		8 Ť	c. i	D. (	<b>2.</b> f
£	230.05	27 7	34 54		230.05	immatrice	9 9 9 9		, g	<b>2.</b> c	a. c	D. C
- <del>-</del>	28 62	2 u:	143	0 0	28 62	mature	noor		159	2.0		. 0
f1-10	177.05	10	17.71	20	53.12	immature	poon		160	. a	. 0	. a.
f1-11	224.52	02	157.16	0	224.52	immature	pood		161.162	. c.	. с.	. 0.
f1-12	240.62	20	48.12	0	240.62	immature	poof		163	۵	o.	a.
a20	183.61	20	36.72	0	183.61	immature	poor		0	윤	랃	g <sub>c</sub>
f1-13	89.90	22	22.48	20	26.97	mature	poof		164	a.	욘	욘
a21	166.21	<b>13</b> 3	41.55	0 ;	166.21	immature	роо <del>д</del>		0,,,,	₽-	윤	<del>2</del>
11-5	51.92	<del>.</del>	20.77	09	20.77	mature	good		151.152	c.	α.	α.
11-5	23.23	40	9.29	90	9.29	mature	goog		151.152	a.	D.	a
Subtotal	1,952.89		514.02		1,472.86	THE REAL PROPERTY OF THE PERTY			***************************************			
Arkansas Reservoirs								÷				
agcı	473.08	40	189.23	20	236.54	Ë	poof	**	<del></del>	c.	d	æ
ari	1.01	99	0.61	25	0.50		**boog					
agc2	66.13	10	6.61	100	00.0	mix	pooti	2	7	읃	은	œ.
agc3	38.40	40	15.36	08	26.88	хiг	poob	က	ო	a.	du	ф

Arkansas Table 3: Arkansas River & Tributaries - Tamarisk Infestation Attribute Data

		) 	Canopy Coverage	Percent	Riparian				Photo Reference			;
Reference Name	Acreade	Percent Cover	Acreage	Upland	Acreage	Age Status	Access	Avg Height (m)	Number	Cottonwood		Willow Russian Olive
									-	present	(p)/not pro	present (p)/not present (np)
anc3b	512.78	09	307.67	50	256.39	mix	pood			윤	ď	윤
3004	2 290 02	40	916.01	09	916.01	mix	poot	2	4	2	ф	đu
9005	2 552 37	30	765.71	20	1,276.18	ХÌШ	poof	7	κ	Q.	합	2
3000	695.82	10	69.58	100	0.00	mix	boob	es		g,	ф	윤
	582.89	10	58.29	100	0.00	тiх	poor			윤	윤	đ <sub>u</sub>
1 d	19.26	10	1,93	100	0.00	mix	poor			윤	습	9
agc7	271.01	10	27.10	90	27.10	mix	pood	es	œ	c.	ᅀ	œ.
ar4	182.89	10	18.29	20	91.45		<sub>**</sub> poo6					
agc8	163.82	30	49.15	S	81.91	mix	poofi	co.	7	<b>a</b> .	윤	욘
2000	863.25	20	172.65	8	604.27	immature	poofi	ന	80	Ω.	윤	<del>2</del>
o e cre	611.14	10	61.11	20	305.57		"pooß					
ar6	404.03	-0	40.40	20	202.01		poob.					
ar?	61.79	10	6.18	09	24.72	mix	pood	က		윤	윤	<del>d</del>
Subtotal	9,789.68		2,705.87		4,049.54				MAAAAA AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	mmorration/delivation/processing trans-		
Arkansas Tributaries												
agc10	38,46	20	7.69	90	3.85	mature	poob	8	တ	œ.	ď	윤
agc11	30.10	20	6.02	80	6.02	mature	poor	က	9	앒	ద	e.
agc12	204.33	20	40.87	. 09	81.73	mature	poor	က	=	Qi.	흔	g,
agc13	51.15	30	15.35	40	30.69	mature	роог	က	13, 14	Q.	d d	o.
agc14	93.34	20	18.67	06	9.33	mature	poor	က		읃	윤	욛
agc15	173.80	40	69.52	80	34.76	mature	poor	က	15,16	2	g.	윤
att	14.05	40	5.62	8	7.03		poor*					Ċ.
at2	67.09	30	20.13		33.55		poor*					o.
at3	3.56	8	1.78	100	0.00	mature	good	ന		은	QL .	2-
at5	299.44	30	89.83	100	0.00		good***	at2				
at4	83.09	10	8.31	20	41.54		poor					
Subtotal	1,058.42		283.78		248.50	Village perfect contribution of the contributi		- Composite Comp				
Arkansas Related	The state of the s											
Waterways Total	14,640.78	And Compared by the secondary of the sec	4,032.51		6,492.80			CANADA (1994)		AND THE PERSON NAMED IN COLUMN		
Arkansas												
Watershed Total	43,645.87		19,797.65		20,094.89							
		THE STATE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN	**************************************									

Where ground truthing was not availabe for estimation of Percent Upland, a conservative value of 50% upland area was assumed (indicated in bold).

\*\*Non ground-truthed

Arkansas Table 4 -- Arkansas River & Tributaries - Tamarisk Infestation Inventory & Costs Data Width >

Reference Name	Acreage	Percent Cover	Access	Width > or < 50'	Cost Formula*	Most Likely Total Cost	Range High	Range Low
Main Stem Arkansas: Kansas/Colorado Border to Prowers/Bent County Line	Kansas/Colora	ado Border to Prowe	rs/Bent Coun	ity Line				
214	1.80	02	**pooo	, > 50.	83	\$3,471	\$4,321	\$2,622
a15	120.69	09	**poob	> 50,	മ	\$200,937	\$244,044	\$157,873
D1-1	190.87	88	poofi	> 50,	83	\$419,164	\$534,556	\$303,894
p1-2	140.08	80	poof	> 50,	rrî	\$307,630	\$392,318	\$223,032
p1-3	128.10	40	poob	× 20.	α (	\$143,713	\$165,997	\$121,448 6406 E04
419	171.08	ଚ୍ଚ	good	, 20, 10,	m í	\$144,/13	4102,917	\$ 120,324 \$ 406 630
a16	436.56	20	poof	, 20 , 20 , v	en c	4008,907 4008,407	\$/21,333 \$507 806	\$290,030 \$269 873
<del>م</del> 10	158.22	G ;	good	, 20. *	no e	\$386,173	\$342,000 \$342,025	\$203,015 \$137,501
p1-6	86.42	ස :	good	, 20, 10,	י ביב	\$108,700	\$24C,UZ3	\$137,331 \$135 375
p1-7	78.74	æ :	good	, A	no c	\$117,830 9554 705	\$220,030 \$707 535	\$400.007
<u> </u>	252.63	⊋ 8	good	200	<b>1</b> 3 C1	4004,780	\$5,44,075	\$289 254
p1-8	169.58	<b>D</b> 6	good	, v	<b>Δ</b> α	\$140,030 \$140,530	\$168.330	\$130.727
21-10 07-7-1	1/0./0	00 00	good	2 2	<b>ο</b> α	\$220,027	\$271.797	\$187.114
01-10	104.40	25	good	00 00	<b>.</b>	\$245 524	\$3.16.895	\$174.230
	103.31	8 8	000	2 2	α	\$163.154	\$198.155	\$128,188
21.10	368 45	3 6	0000	, v	o oo	\$446.960	\$542.847	\$351,170
#1-)rd	557.07	25	**000	, v	ນຕ	\$1 076 251	\$1,339,659	\$813,115
10 1	337.07	2 8	noofi 2000	200	0 0	10.00.00.00.00.00.00.00.00.00.00.00.00.0	\$416 962	\$237.042
p1-15	146.88	28	000	2 2	۵۵	\$220,000 \$230 464	\$401 350	\$259 641
01-Fq	198.48	<u>.</u> ن م	good	S 5	ם מ	+0+'00'00'00'00'00'00'00'00'00'00'00'00'	6.00 A 440	6474 860
7L-1q	414.79	200	poop	200	മദ	+00.010¢	\$4000,4 %	\$146 343
ρ1-1α 2.13	197.88	윳 [	good	) ( ^	Σ	\$101,002 \$402,365	\$100,430	\$204 197
91-1q	345.52	ņe.	, 0006		ກີເ	000,000 100 004	801 Z,001	#50 452
p1-20	188.92	10	good	, 20°	nε	\$33,831	901,002	400, 102 407 760
ක්රී	24.41	ල :	good	ਨੂੰ ^	no (	934,U3U	000,034 000,034	\$244 740
p1-21	189.27	0/	poor		ے ت	\$450,132	4014,460	94 404 450
a 19	1,073.41	90	apoo6	× 20.	m	1,1,787,171	\$2,1/U,5/4	91,404,100
Subtotal	6,087.60					\$10,054,330	\$12,333,013	\$7,776,776
Main Stem Arkansas: Bent County (Including John Martin Reservoir)	3ent County (I.	including John Marti	in Reservoir)					
b1-2	227.91	9	boob	> 50,	മ	\$379,448	\$460,852	\$298,127
b1-3	47.09	80	pood	> 50,	œ	\$103,409	\$131,877	\$74,972
b14	131,47	80	poofi	> 50,	В	\$288,721	\$368,204	\$209,323
a10	27.43	02	good**	> 50,	മാ	\$53,000	\$65,972	\$40,042
5-1d	193.73	30	poofi	> 50,	æ	\$163,874	\$184,489	\$143,276
b1-5	147,95	80	poof	> 50,	<b>2</b> 0	\$324,913	\$414,359	\$235,563
b1-6	235.39	10	poof	> 50.	മ	\$67,073	\$71,646	\$62,501
b1-8	229.78	80	pooß	> 50,	മ	\$504,610	\$643,525	\$365,843
b1-9	74.47	80	pood	> 50,	ω	\$163,541	\$208,562	\$118,567
b1-10	38.78	20	pood	> 20,	<b>60</b>	\$54,091	\$64,078	\$44,113
a 11	568.42	09	good	> 20,	മ	\$946,389	\$1,149,418	\$743,564
b1-19	442.21	09	good**	> 50'	æ	\$736,261	\$894,211	\$578,470
a12	127.48	80	good**	> 20,	<b>co</b> :	\$279,953	\$357,022	\$202,966
b1-18	88.45	80	poor	> 50,	Ω ;	\$224,823	\$276,231	\$173,018
b1-17	173.36	80	pood	> 50,	മ	\$380,704	\$485,508	\$276,010
				٠.				

Arkansas Table 4 -- Arkansas River & Tributaries - Tamarisk Infestation Inventory & Costs Data Width >

Reference Name	Acreage	Percent Cover	Access	or < 50'	Cost Formula*	Most Likely Total Cost	Range High	Range Low
a13	145.06	.02	**boog	× 50.	æ	\$280,251	\$348,841	\$211,732
b1-14	262.28	09	poob	> 20,	മ	\$436,686	\$530,369	\$343,098
51.13	160.38	70	pood.	√. F.O.*	α	\$309 846	\$385 680	\$234 091
2, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	47.40	2.5	000	3 2	) c	000 300	0000000	404 aca
D 1-12	047.14 000.45	2 0	2000	200	0 0	0.000 HAR	CD2,CF4	EA12 271
] - [ \alpha   \cdot	202.43	2 6	poofi	2 5	0 (	100,0404	24.2,610¢	6734 340
133.1	500.97	0 ;	poob	ევ ; ^	mî (	086, 058	\$1,204,705	042,1574
Zwi	422.58	0/	good	> 20,	m	\$816,422	\$1,016,238	5616,813
jm3	81.93	80	**boog	> 50,	В	\$179,931	\$229,464	\$130,450
jm4	229.63	70	**poob	> 50,	മ	\$443,636	\$552,215	\$335,171
jm5	54.61	20	**boog	> 20,	Φ	\$105,508	\$131,331	\$79,712
jm6	11.75	80	**boog	> 50,	В	\$25,799	\$32,902	\$18,705
7mi	69.94	70	good**	> 50,	83	\$135,115	\$168,183	\$102,080
jm8	68.94	09	dood**	× 50°	82	\$114,784	\$139,409	\$90,184
6Wi	76.07	20	acod.	× 50,	. 60	\$146.965	\$182,934	\$111,033
im10	87.32	2 8	**poop	× 20.	·	\$191.768	\$244.560	\$139,032
im1	346.82	80	apoop.	^ 20,	മ	\$761.645	\$971.318	\$552,193
im12	464.01	8	aood**	, 20, 4	മ	\$1,019.003	\$1,299,525	\$738,778
jm13	114.48	80	#poob	× 20,	m	\$251,413	\$320,624	\$182,275
im14	133.93	80	acod**	20.	മ	\$294,121	\$375,090	\$213,238
im15	466.20	80	dood**	^ 20;	o co	\$1,023.812	\$1,305,657	\$742,264
jm16	48.96	20	#*boop	20.	മ	\$94,583	\$117.732	\$71.458
jm17	208.95	70	#poop	, 20, ×	മ	\$403,697	\$502.501	\$304,996
jm18	135.82	70	dood**	20.	മ	\$262,396	\$326.617	\$198.242
im19	249,10	20	**poop	× 20	. 20	\$481,256	\$599,042	\$363,593
jm20	184.15	20	t,poob	> 20,	: <b>m</b>	\$355,773	\$442.847	\$268,789
jm21	98.81	20	cood**	^ 20 <b>.</b>	· Œ	\$190,901	\$237 623	\$144 227
im22	321.96	02	**DOOD	> 50,	α	\$622 020	\$774 257	\$469 941
im23	25.36	02	**poop	v 50,	ນ ແ	\$49 003	\$60.99	\$37.022
im24	115.38	02	*,pood	, 20.	o cc	\$222 915	\$277.472	\$168 414
im25	75.23	: e	**	\ \ \ \ \ \ \ \	n c	4165 205	£210 ABA	8110 774
im26	22.15	8	***	, v	2 0	648 647	\$50,000 \$60,030	F17.51
25mi	213 33	S &	***	2 G	ם ב	\$40°,04%	#04,000 #607.470	C33,004
1200g	47.36	8 9	noon	8 6	ů c	かかす のいら	2/4, 1800 1800	200,200 110,404
05.00	46.74	28	poofi	200	no o	4/0,004 4/0,004	177,086	\$61,455
100 mg	1.0.7	2 9	Doop	200	ໝໍເ	\$13,535	\$16,847	\$10,225
Deling *C-:	10.22	00.0	good	20.	<b>10</b> 4	800,714	750,65	\$13,363
TO LE	06.500	OG :	good	^	<b>3</b> 3 :	\$934,442	\$1,106,975	\$762,077
61-F0	149.26	) 9	pood	× 20,	œ;	\$248,517	\$301,831	\$195,256
b1-15	55.08	09	pood	> 50,	മ	\$91,711	\$111,386	\$72,056
b1-16	325.03	80	pood	> 20,	മ	\$713,799	\$910,301	\$517,505
51-16	0.21	80	poob	^ <del>2</del> 0,	മ	\$471	\$600	\$341
Name of the last o				AND				
Subtotal	9,713.94					\$18,220,239	\$22,713,215	\$13,731,477
Main Stem Arkansas: Otero County	ero County							
01-1	538.23	90	poofi	> 50,	œ	\$896,115	\$1,088,359	\$704,065
, acr	106.85	09	**poob	× 50,	<b>co</b> 1	\$177,892	\$216,055	\$139,767
01-3	278.72	2	boob	, 20. ×	ess.	\$306,492	\$363,081	\$249,957

Arkansas Table 4 -- Arkansas River & Tributaries - Tamarisk Infestation Inventory & Costs Data

	Kande Low	\$271,375	\$153,975	\$182,807	\$164,314	\$120,428	\$355,617	\$203,054	\$203,385	\$33,135	\$339,432	\$235,569	\$78,912	\$29,292	\$143,549	450 C04	403,012 4422 549	\$700.340	\$466.935	\$66.384	\$216,576	\$247,515	\$162,760	\$277,569	\$152,133	\$6,907,171		\$852	\$2,663	\$8,654	\$5,108	87,078	\$230	\$1,193	\$170	\$3,509	007/04	989,780	\$14,223	488 181	401,000	\$603.381	\$86.908	\$452.745
	капое нідп	\$419.497	\$181,183	\$311,136	\$224,585	\$150,573	\$646,808	\$334,544	\$314,397	\$45,289	\$541,583	\$331,873	\$95,827	\$33,578	\$196,204	\$827,025	\$121,743	\$07.708	\$523,720	\$80.614	\$296.017	\$338,305	\$197,648	\$379,382	\$220,985	\$10,236,402		\$949	\$3,233	\$9,920	\$6,026	\$8,113	\$256	\$1,266	681.5	\$4,261	\$6,381	\$122,712	567,725	\$101.084	\$101,004 \$133,028	\$750.322	\$118.786	\$618.813
· · · · · · · · · · · · · · · · · · ·	Most Likely Total Cost	\$345,399	\$168,046	\$246,938	\$194,435	\$135,494	\$501,134	\$268,765	\$258,863	\$39,209	\$440,456	\$283,698	\$87,366	\$31,434	\$169,864	\$664,412	\$102,706	\$210,100 \$813.245	\$552.532	\$73.497	\$256,278	\$292,889	\$180,198	\$328,452	\$186,542	\$8,573,169		\$901	\$2,948	\$9,287	\$5,567	\$7,595	\$243	\$1,234	\$179	\$3,885	818,08	\$106,239	980,681	\$104, 100 \$94 631	\$426.505	\$678.501	\$102,839	\$535,741
:	Most Like																						٠																					
1	Cost Formula	600	۵ ۵	മ	ക	æ	æ	60	8	മ	Ф	æ	æ	<b>c</b> a	മ	ena n	n a	0 6	3 m	200	ഹ	Ω.	ക	മ	œ			œ	α	89	œ	83	æ	ا ۵	<u>ac</u> ; i	മ	ם מ	n c	na an	. α	3 C	۵ ۵	മ	ıa
WIGHT	or < 50.	> 50	20° A	> 20,	> 50,	> 50,	> 50,	> 50,	> 50,	> 50,	> 50,	> 50,	v 50°	× 50,	> 20,	20.	) ( ^	2 G	) 20 10 10	)   	, O2 20	> 50,	> 50,	> 50,	> 50'			> 20,	> 20,	> 50,	> 20.	> 50,	> 50,	× 50'	, 20. -	, v 50'	00.0	200	7 7	20° 50° 70° 70° 70° 70° 70° 70° 70° 70° 70° 7	) () ()	, 20, 4	, 20,	7
	Access	poor	100d	poop	poob	boob	boob	**poog	poob	poob	poof	good**	poof	pooß	poob	good	good	poof.	**poor	COOC	pood	poob	pood	poof	poob		ervoir Dam	poon	poob	pood	boob	poob	poog	poor	poofi	boog	good	boog	000g	good	2006	000	**pood	5000
	Percent Cover	09	සි සි	75	40	25	85	70	09	40	65	45	20	9	40	Q 2	90 32	2 6	S 4	S &	40	40	20	40	50		ine to Pueblo Res	£C)	50	10	15	10	in.	ء -	ກ ;	2, 2,	₹ \$	9 4	<u>ο</u> 4	5 €	2 5	40	40	40
	Acreage	207.45	158.94	119.62	173.31	191.71	215.36	139.11	155.48	34.95	244.86	225.38	154.11	110.32	151.41	343.90	73.67	700.43	400.43	129.65	228.44	261.07	317.86	292.77	133.73	6,177.32	tero County L	6.31	5,20	32.59	13.06	26.66	1.70	3.3/	1,26	6.85 42.26	10.20	490.75	205.73	332.13	176.01	490.98	91.67	477 54
	Reference Name	0,10	410	01-5	01-6	01-7	01-8	a6	6-10	01-11	01-10	78	01-12	01-13	01-14	01-15	01-16	-1-10	0 0 0 0 0 0 0 0 0 0	01-10	01-20	01-20	01-21	01-22	01-23	Subtotal	Main Stem Arkansas: Otero County Line to Pueblo Reservoir Dam	pu1-2	pu1-3	pu1.4	pu1-5	pu2-20	pu2-22	pu2-21	pu2-23	puZ-24	cz-znd	puz-31	puz-50	18 9C-CHG	DI1-18	pu1-17	92	2017

Arkansas Table 4 -- Arkansas River & Tributaries - Tamarisk Infestation Inventory & Costs Data Width >

Reference Name	Acreage	Percent Cover	Access	or < 50'	Cost Formula*	Most Likely Total Cost	Range High	Range Low
The second secon								
7. 2.	240.35	40	poor	> 50'	æ	\$269.648	\$311,460	\$227,875
2 1	20000	2 5	0 00 0	7	ı	8758	\$832 495	\$685,543
CI-Ind	U.OCC, I	23 ;	מאספר מי	2 6	) ()	*CO 1.306	8449 900	£302 300
a3	318.95	04	good	06 <b>&lt;</b>	ا ۵	+ NO. 1000	010,0113 010,100	000,1000
pu1-14	542.63	9	boob	, 2 <u>0</u> , ^	m	\$803,454	277,180,17	87 US, 63.1
pu1-13	382.10	70	poot	× 20,	œ	\$738,211	\$918,885	\$557,723
01:1-14	305.85	09	pood	× 50'	α	\$509,216	\$618,458	\$400,084
011110	245.89	: E	pood	> 50,	œ	\$207.994	\$234,159	\$181,851
1 2 2	25.30		70 OG	, (c)	ια	\$492 684	\$583.652	\$401.805
s-+nd	333.20	25	2006	2 2	<b>a</b> c	604 404	200,000\$ 4100 369	487 000
pu1-10	92.81	40	good	200	ໝ	621,401.6	007,021 \$	200,100
pu1-11	316.78	40	poob	× 20,	œ	\$355,386	\$410,492	\$300,330
84	238.08	40	**poog	> 50,	<b>a</b>	\$267,094	\$308,510	\$225,717
pu1-7	154.18	40	dood	> 50	മ	\$172,972	\$199,793	\$146,176
. 89	151.42	50	good**	> 50'	œ	\$211,220	\$250,220	\$172,259
								Semi-mark
Subtotal	7,026.24					\$7,276,000	\$8,449,597	\$6,099,344
Totals for Main Stem	29.005.09	THE RESIDENCE AND ASSOCIATION OF THE PERSON				\$44.123,739	\$53,732,226	\$34,514,769
		Comment Contains and Contains a		AND THE PROPERTY OF THE PROPER	AND THE RESIDENCE OF THE PROPERTY OF THE PROPE			
Arkansas Tributaries								
Huerfano River								
11-11	200.80	09	good	> 50	æ	\$334.317	\$406.038	\$262,668
322	122.19	20	**POOD		ı	\$170.442	\$201.911	\$139,002
h1-10	34.55	40	2000	2 <u>0</u> 20 A	n co	\$38.761	\$44 771	\$32.756
	174.65	÷	5000	, V	ם נו	\$147.737	\$166.322	\$129 168
: <del>-</del>	59.68	20 80	pood	, 20° v	a 60	\$33.832	\$37.109	\$30.558
7.5	125 66	50	noor	> 50°		\$212,710	\$241 355	\$183.186
h1-7	93.97	3 8	500	, v	) a	\$53.273	\$58.432	\$48.118
11-8	1/13 5/4	3 2	poop 0	, 50° V	) a	\$81 372	489 252	\$73.498
0.50	176.45	3 4	D 000	S & ^	<b>a</b>	475,718	481 422	\$60.018
3 600	77.73	2 6	**	2 6	3 0	\$36.718 \$36.718	\$40.074	A22 488
222	2.1.0	04 6	noon Soot	2 2	3 0	300,000	820.14 820.14	\$45 B20
† <del>-</del> - 1	21.12	2 8	good	200	0 0	200,119	60 000	020;C=+
7 2	3.00	8	poofi	2 20	0 0	106,24	100,000 100,000	000.124 070.04
2-1-2	0,00	2 6	poofi	2 6	ů c	DO0,24	40,804 40,804 40,804	0.12,24
7 - 1	244.04	3 5	poofi	2 2	G 6	C11,0C20	00000000	#201,103 #200,103
	341.24	ne :	goog	OC <	<b>n</b> 1	04473,490	\$203,883	\$366,183
n1-1	1.76	99	boob	20 4	m	\$2,453	\$2,906	\$2,001
Subtotal	1,839.79				Management	\$1,917,038	\$2,219,863	\$1,613,588
Fountain Creek			٠	٠				
<u>+</u>	85.17	40	pood	> 50	۵	\$95,550	\$110,366	\$80,748
11.2	22.64	. 10	good	> 50,	۵۵	\$6,451	068'9\$	\$6,011
11-3	52.64	30	pood	> 50,	œ	\$44,524	\$50,124	\$38,927
£1-4	63.71	15	poof	> 50,	മ	\$27,160	\$29,400	\$24,921
						1		

Arkansas Table 4 -- Arkansas River & Tributaries - Tamarisk Infestation Inventory & Costs Data Width >

		1		Width >				
Reference Name	Acreage	Percent Cover	Access	or < 50'	Cost Formula*	Most Likely Total Cost	Kange High	Kange Low
11-6	170.00	20	poob	> 50'	æ	\$96,373	\$105,706	\$87,047
11-7	143.01	20	poob	> 50,	Φ	\$81,073	\$88,924	\$73,227
f1.8	230.05	15	good o	× 50°	Œ	898 968	\$106.158	986,68\$
2. 2.	28.62	? ur	2006	× 50°	) C	\$5.291	\$5.362	\$5.181
51.5	177.05	2 5	5000	, ,	o co	CEO 440	453 88D	\$47.011
1	227.52	2 5	2005	) () ()	o a	\$433 775	\$539 939	\$327.720
15-11	24.52	2 8	good good	9 6	n er	\$136.405	\$149 615	\$123.205
Z1-21	182 64	8 8	7005	9 7	ם מ	#133,700 #131,065	6130,010	£124 338
078	103.01	82	lood Tood	2 2	2 0	CON 101 W	820.640	ATE A72
21-11	08.80	27.0	noofi	5 50	נים	000'00# 000 type	0.0.0.0	474,000
a21	166.21	Q Q	poor	200		8/6/14/4 4/0 034	404,1014 404,1014	400,400 400,000
٥- L	51.92		good	. 2G. ^ 2G.	20.1	\$58,244	9/7'/00	122,22
11-5	23.23	40	poob	> 50,	ma a	090'92\$	\$30,101	\$22,023
Subtotal	1,952.89					\$1,502,806	\$1,710,584	\$1,293,472
Arkansas Reservoirs	,							
agc1	473.08	40	poof	> 50,	മ	\$530,742	\$613,040	\$448,521
ar1	1.01	09	#poo6	> 50,	<b>6</b>	\$1,681	\$2,042	\$1,321
agc2	66.13	10	poofi	> 50'	<b>co</b>	\$18,843	\$20,128	\$17,559
agc3	38.40	40	pooß	> 50,	æ	\$43,076	\$49,756	\$36,403
agc3b	512.78	90	poor	> 20,	۵	\$1,020,218	\$1,188,234	\$848,756
agc4	2,290.02	40	boob	> 50,	8	\$2,569,131	\$2,967,504	\$2,171,125
agc5	2,552.37	30	poot	> 20,	മ	\$2,158,997	\$2,430,594	\$1,887,629
agce	695.82	10	pooß	> 50,	M	\$198,268	\$211,788	\$184,755
ar2	582.89	10	poor	> 50'	۵	\$213,511	\$219,054	\$206,499
ar3	19.26	10	poor	× 50,	۵	\$7,054	\$7,238	\$6,823
agc7	271.01	10	poofi	> 50,	a	\$77,223	\$82,489	\$71,960
ar4	182.89	40	**poob	> 20,	œ	\$52,114	\$55,667	\$48,562
goge	163.82	30	boob	> 50'	ග	\$138,574	\$156,006	\$121,156
agc9	863.25	20	poob	> 50,	മ	\$489,376	\$536,768	\$442,018
ar5	611.14	9	**poog	× 50,	മ	\$174,137	\$186,011	\$162,269
ar6	404.03	9	good:	× 50,	œ	\$115,123	\$122,974	\$107,277
ar7	61.79	10	pood	> 50,	ш	\$17,607	\$18,807	\$16,407
Subtotal	9,789.68					\$7,825,675	\$8,868,099	\$6,779,038
Arkansas Tributaries								
agc10	38.46	20	poofi	> 50,	<b>20</b> 1	\$21,801	\$23,913	\$19,692
agc11	30.10	20	poor	> 50,	۵	\$21,635	\$22,750	\$20,384
agc12	204.33	50	poor	× 50,	۵	\$146,859	\$154,431	\$138,371
agc13	51.15	99	poor	> 20,	۵	\$54,083	\$58,310	\$49,554
agc14	93.34	50	poor	> 20,	۵	\$67,083	\$70,542	\$63,206
agc15	173.80	40	poor	> 20,	۵	\$240,178	\$265,602	\$213,587
at1	14.05	40	poor	> 50,	۵	\$19,421	\$21,477	\$17,271
at2	62.09	30	poor**	> 50,	۵	\$70,935	\$76,480	\$64,995
at3	3.56	90	poof	> 50'	ಮ	\$4,970	\$5,887	\$4,053
at5	299.44	30	**poob	> 20,	œ	\$253,287	\$285,150	\$221,451

sas River & Tributaries - Tamarisk Infestation Inventory & Costs Data

	Range Low	\$29,436	\$841,999	\$10,528,098	\$45,042,867	Cost Formula (Low Range)	y = -0.0916X <sup>2</sup> +23.051X	$y = -0.1584X^2 + 32.449X$	$y = -0.1568X^2 + 36.995X$	
o costs Data	Range High	\$31,226	\$1,015,768	\$13,814,313	\$67,546,540	Cost Formula (High range)	$y = -0.0736X^2 + 29.191X$	$y = -0.1128X^2 + 35.115X$	$y = 0.0208X^2 + 37.373X$	y = Cost (\$/acre) X = Percent Cover
River & Tributaries - Lamarisk Infestation Inventory & Costs Data	Most Likely Total Cost	\$30,436	\$930,687	\$12,176,205	\$56,299,944	Cost Formula (Most Likely) Cost Formula (High range)	$y = -0.0826X^2 + 26.121X$	y = -0.0149X + 20.045X $y = -0.1379X^2 + 33.961X$	$y = -0.0694X^2 + 37.324X$	
outaries - Lamaris	Cost Formula*	۵					good access	ood access poor access	oor access	
River & Trik	or < 50'	> 50,				scriptions*	tions (< 50°) with	ons (> 50°) with g tions (< 50°) with	ons (> 50") with p	
	Access	poor**				*Cost Formula Descriptions*	A = Narrow Infestations (< 50') with good access	<ul> <li>B = Broad infestations (&gt; 50') with good access</li> <li>C = Narrow Infestations (&lt; 50') with poor access</li> </ul>	D = Broad Infestations (> 50') with poor access	
Arkansas Table 4 Arkansas	Percent Cover	10				*	•	ш		
Ą	Acreage	83.09	1,058.42	14,640.78	43.645.87					
	Reference Name	at4	Subtotal	Total for Tributaries/Reservoirs	Arkansas Totals					

<sup>\*</sup> Costs are based on detailed cost information found in Options for Non-Native Phreatophyte Control, March 2006, Tamarisk Coalition

\*\*Non ground-truthed

Purgatoire Table 1: General Tamarisk Inventory Data for Purgatoire River and its Related Waterways

Arkansas Confluence to Trinidad Lake Dam

Purgatoire River Main Stem	Cummulative River Miles	Average Width (ft)	Max Width (ft)	Min Width (ft)	Average Density (%)	Total Acreage	Total Canopy Cover (acres)
Arkanese Confliction to Boat / Okara	0						
County Line	38	656	2490	20	34%	3,023	1,042
Otero County		777	1,820	15	33%	2,072	675
Otero / Las Anímas County Line to Trinidad Lake Dam	179	288	2,000	10	23%	4,155	976
Totals =	s = 179	574			29%	9,250	2,693
Related Waterways	River Miles	Average Width (ft)	Max Width (ft)	Min Width (ft)	Average Density (%)	Total Acreage	Total Canopy Cover (acres)
	0						
Powell Arroyo	9	16	375	10	11%	12	₩-
Raton Creek	ო	25	280	10	5%	o	_
Chicosa Arroyo	15	77	315	5	76%	140	37
Frijote Creek	19	23	285	10	35%	52	18
San Francisco Creek	13	9	265	10	. 49%	6	4
San Isidro Creek	21	71	310	10	25%	182	46
Trinchera Creek		20	215	10	20%	17	က
Luning Arroyo	30	16	240	10	45%	56	25
Van Bremer Arroyo	24	16	275	10	23%	45	10
Chacuaco Creek	24	78	465	20	22%	227	51
Bent Canyon	10	<del></del>	235	10	20%	4	က
Totals =	5 = 172	37	COMMITTEE OF THE PROPERTY OF T		26%	763	199

Purgatoire Table 2: Existing and Future Water Loss Estimates due to Tamarisk Infestations in Purgatoire River Watershed and Estimated Control & Revegetation

***Cost estimates for Tamarisk Control & Revegetation	\$2,926,850 \$1,900,062 \$3,213,320	\$8,040,233	\$9,017,959 \$7,050,208	\$869 \$1,009 \$44,918	***Cost estimates for Tamarisk Control & Revegetation	\$3,511	\$50,559	\$14,286	\$9.834	\$84,958	\$37,131	\$7,734	\$619,204	\$694,131 \$542,705	\$811 \$1,078 \$2,028
Future Water Loss (acre- feet/year)	8,926 6,289 12,099	27,314	High Range ≖ Low Range ≖	Average cost per acre of infestation =: s groundwater and/or surface water =: Average cost per mile =:	Future Water Loss (acre- feet/year)	39 24 263	149	26	20 20 20 20	165	133	40	2,203	High Range ≖ Low Range ≖	Average cost per acre of infestation = s groundwater and/or surface water = cost per mile (excluding reservoirs) =
Current Water Loss (acre- feet/year)	3,075 2,049 2,841	7,966		Average cost per ved as groundwater an Ave	Current Water Loss (acre- feet/year)	4 ~ ¢	52	12	<u>\$</u> 0	74	31	g &	575		Average cost per acre of infestation served as groundwater and/or surface water Average cost per mile (excluding reservoirs)
% Area capable of Supporting Cottonwood/Willow Plant Community	47% 38% 52%	47%		Average cost per acre-foot of water preserved as groundwater and/or surface water Average cost per mile	% Area capable of Supporting Cottonwood/Willow Plant Community	90%	50%	51%	50%	20%	%0¢	50%	55%		Average cost per acre-foot of water preserved as groundwater and/or surface water Average cost per mile (excluding reservoirs)
Total Canopy Cover (acres)	1041.54 675 976	2,693			Total Canopy Cover (acres)		18	4 4	Ç €	25	- Y		199		
Total Acreage	3,023 2,072 4,155	9,250			Total Acreage	42.9	52	œ ်	7,	56	700	14	763		*
Average Density (%)	34% 33% 23%	29%			Average Density (%)	11% 5% 26%	35%	49% 25%	20% 20%	45%	25%	20%	76%		
Cummulative River Miles	38 60 179	179			River Miles	ထ က င်	<u>0</u>	5 5		8 8	24	1 <del>2</del>	64		
Purgatoire River Main Stem	Arkansas Confluence to Bent / Otero County Line Otero County Otero / Las Animas County Line to Trinidad Lake Dam	Totals =			Related Waterways	Powell Arroyo Raton Creek Chicosa Arroyo	Frijole Creek	San Francisco Creek	Trinchera Creek	Luning Arroyo	Chactago Creek	Bent Canyon	Totals =		

Purgatoire Table 3: Purgatoire River & Tributaries - Tamarisk Infestation Attribute Data

	Russian Olive		æ	٤	2				du	œ.				Q									Š	2 8	<u>.</u> 2	₽ 2	<del>2</del>	2	2 2	<u>.</u>						d	a	Ь				۵.		L		o.	d	۵	۵.	2.0	)
	nwood Willow Russ		œ.	ć	a.				a.	a.				QC.	<del>}</del>								,	a. e	D. C	2.0	20	<i>-</i> c	a. c	2.						a.	Ω.	d			ć	<u>a</u> (	<b>3.</b> C	ì		۵	۵	a,	a c	<b>4</b> 0	ı
	Cottonwood present (		Œ.	c	2				đ	욘				c	Ł							-	(	۵.	<u>a</u> c	a. c	2.0	<i>T</i> C	2. 0	2						a	. ന്	đ			4	C2. s	. c	ì		a	a	du	ca. c	n. c	2.
Photo Reference	Number		2	۰ د	n				ស	<b>د</b> ه .				Œ	þ								١	~ 0	w ÷	≥ ;	= \$	3 Ç	2 5	<u>:</u>						25	23	æ			ç	8.4	9. 29	5	٠	2	7.4	75	1.6	- 2	2
allialish Illestation Al	Avg Height (m)		en :	0 (	σ.		ř		m	ю				or	,									n a	ים כי	o (1	2 .	ກ' ຄ	2 6	າ						4	ဗ	m			· ·	חרי	0 4	r		m	4	en -	4 0	n ~	•
	Access		poof	good	0000	g000	pools dood	pood	pooß	poob	**poob	good**	booti	1300g	3000	9000	2000	2008	#2000 0000	**pood	<b>)</b>			goog goog	good good	noor to	2005	200	900d	0000	Bood.	- Pools			good	poob	poof	poofi	**poob	paob	good	Dood	5005	***	acoon.	poof	poof	lood	good	000g	poof
Percent Pinarian	Age Status		mature		mature				mature	mature				out the contract	annie.								,	mature	mature	mature	manure	agniteus	matrice	uame						mature	mature	mature			;	mature	mature	o finale		mature	mature	mature	mature	mature	annau
Dinarian	Acreage		105.14	35.41	117.04	81.UU	22.81	0.02	32.04	132.65	70.49	59.98	34.80	08.17 60.30	00.20	58,00	- 50,04 - 51,04	74.25	117.49	86.24		1,434.23	6	166.23	136.20	3,1,5,0	63.06	37.87	07.07	00.00	32.04	i o	780.84		3.65	29.59	26.95	49.70	28.00	38.14	80.69	48,80 28,25	34.03	35.86	46.50	15.94	27.73	3,17	74.01	34.75	0.98
	Upland		80	90	e :	3 2	3 2	50.00	30	30	20	20	20	n u	2 5	200	6 5	2 5	F 67	9 09			í	2 8	99	20 50	2 9	8 8	3 5	2 5	8 5	8				09	50	50	20	20	50	2 (2	3 5	} <b>6</b>	900	20	20	50	S 4	8 2	8 <b>8</b>
Furgatoire	Acreage	Otero County Line	157.71	21.25	50.16	32.40	0.73	0.01	13.73	56.85	56.39	47.99	20.88	40.87	91.04	45.54	19:00	14.64	94.03	51.74		1,041.54		100.33	175.72	28.78 25.05 26.05	85.00	30.70	30.30	44.25	36.70	36,34	675.40	Oten I se Animas County   ine to Trinidad   ake Dam	0.37	3.70	2.69	9.94	5.80	7.63	13.82	9.7b	27.7.F	21.51	08.6	12.75	5.20	2.78	27.01	61.32	0.59
•	Percent Cover	onfluence to Bent / (	30	30	SS :	50	0.70	50	8	30	40	40	30	9 39	<u> </u>	40	04	2 ( ) (	99 Q	<del>}</del> %				. 30	45	35 S	8 8	S &	04	02.0	S &	2		Animae County Lin	S County Line	кo	2	10	£Ç.	10	9	2 9	2 €	3 8	\$ <b>2</b>	40	15	70	8 9	9 6	30
	Acreage	Arkansas Co	525,71	70.82	167.19	162.00	3.63 45.84	0.05	45.77	189,50	140.97	119.97	69,61	136.25	136.41	177.86	166.67	206,51	234.00	172 48		3,022.90	Ō	334,44	390.50	199.30	283.54	75.74	73,74	221.26	102,05 36,36	30.33	2,072.47	Otero / Lac	7.32	73.97	53,89	99,41	115.99	76.28	138,15	97.60	62 OB	75.71	93.00	31.88	34.66	3.97	108.02	203.3U	1.95
	Reference Name	Mainstern Purgatoire: Arkansas Confluence to Bent / Otero County Line	tob1	pi19	tpb2	pi45	p46	0148	5003	(pb3	pi49	pi50	pi51	pi52	4001	ESIO E	400	ccid	DISC 7.87	755 758 758		Subtotal	Mainstem Purgatoire:	(bo1	tpo2	thos	tpo4	cody	ood:	/odi	Sold of	) or	Subtotal	Mainstern Burgatoire.	Manisten engarone.	- Cot	tp3	tp4	рi2	pi3	4 d	6d)	450	÷ rg	98	Sct.	64)	tp10	tp11	1012 1012	pito

Purgatoire Table 3: Purgatoire River & Tributaries - Tamarisk Infestation Attribute Data

			ruidatoli	ruigatolle Table 3. Fulgatolle Niver &	ulgatolle	2011	20.00		Photo Reference			
Reference Name	Acreage	Percent Cover	Canopy Coverage Acreage	<u>Vercent</u>	Acreage	Age Status	Access	Avg Height (m)	Number	Cottonwood	nwood Willow Russ present (p)/not present (np)	Russian Olive
1,0	64.16	20	12.83	20	32.08		Lood					
. 6	196.20	20	39.24	20	98.10		pood					
100	81.65	20	16.33	20	40.83		bood					
4tio	90.95	20	18.19	20	45.47		poor***					
D 15	77.92	15	11.69	20	38.96		poot.					
0116	104.96	10	10.50	20	52.48		poor					
Di 17	105.10	20	21.02	9	52.55		poor					
pi18	95.07	50	19.01	20	47.53		rood					
pi28	25.56	30	7.67	25	12.78		bood					
929	28.80	20	5.76	95	14.40		Lood.					
pi30	16.45	20	3.29	20	8.22		pood					
pi31	32.31	50	6.46	20	16,15		boot					
pi32	13.04	20	2.61	20	6.52		pood					
pi33	34.25	8	10.28	20	17,13		pood.					
pi34	16,26	20	3.25	20	8,13		, lood					
6Siq	54.32	20	10.86	8	27.16		book	:				
pi40	10.14	30	3.04	S :	5.07		pood	ī				
pi41	17.82	30	5.35	20	9.91		bood					
pi42	50.99	30	15.30	<u> </u>	25.50		1000d					
pi43	34.86	e :	10.46	2	54.7		5000					
pi44	27.15	30	6.14	9 6	13.07	on the man	500	ion,	15	a	۵	Ş
(p2-1	31.31	S 6	25.20 20.00	? ⊊	4 738	anne	300g	>	!	L	_	-
bi67	14.75	20	2.93	3 8	1.30		, tood					
pi68	29.34	e 8	8.80	2 2	45.07							
69rd	26.77	39	6.03	2 5	22.23	excitem	pool	er,	86	Q	a	ġ.
014	37.84	0/2	25.05	5 Q	21.47	mature	5000	·	001	<del>.</del> &	. 0.	OL.
0176 5176	22.30	0.4	892	: 27	11.15		poor					
7730	61.03	7 7	12.20	S	30.50		boot.					
27/0	40.65	3 %	12.20	20	20.33		poor					
820	33.51	20	6.70	20	16.75		poor**					
pi81	90.68	30	27.20	25	45.34		poor					
pi82	137.93	30	41,38	20	98.89		boot*					
pi83	65.82	30	19,75	20	32.91		bood					
pi84	74.53	06	22.36	20	37.27		poor					
pi85	87.34	20	17.47	20	43.67		boot	•	à	í	, (	ē
tp3-1	302.12	30	90.64	50	241.70	mature	bood	77	Ç;	۵.	Ţ	<u>=</u>
pi86	151.85	30	45,55	20	75.92		000					
pi87	83.52	8	25.05	95 i	41.76		5000					
89id	98.21	20	19.64	9	49.30		bood.					
6810	22.98	93	6.89	<b>0</b> .0	11.49	200	5000	0	8	a	a	œ
tp14	07.69	0.7	5.03	3	200		305	4	}			
Subtotal	4,155.08		975.78		2,173.47							
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Durateire Tetale	97 020		2 500 5		A 288 KA							
ruigalone i otais	3,430.45		4,034.14		+0.000.4							
Purgatoire Related Waterways	laterways											
Raton Creek					:		-	4	ç	ć	ć	ç
tre1	9.09	r)	0.45	<b>5</b>	8.18	mature	boog	7 .	24	ф. 1	α. 1	⊋ 8
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žd <b>i</b>	0.01	90	50.0	3	8	o man		>				
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Column   C	Column   C	California   Cal	Acreage Percent Cover  9.27 5 2.24 30 0.43 50 11.94 50 2.11 30 12.53 10 6.63 5 39.12 5 24.72 70 34.14 30 1.98 50 0.44 80 0.57 40 0.57 40 0.57 40 0.57 40 0.57 40 0.57 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.51 80 0.63 80 0.63 80	Acreage  0.46 0.67 0.21 1.35 1.25 0.33 1.96	Percent			2	marisk Intestatio	n Attribute Data			
1,144	1,144   2, 20   1,144   1,14	1,144	9.27 5 2.24 30 0.43 50 11.94 50 11.94 50 2.11 30 12.53 10 6.63 5 39.12 70 34.14 30 0.44 80 0.65 93.2 2.11 30 0.67 40 9.32 90 0.85 5 5.26 5 0.85 5 0.85 5 0.85 5 0.85 6 0.81 5 0.82 6 0.83 6 0.84 6 0.85 6 0.85 6 0.85 6 0.85 6 0.85 6 0.86 6 0.87 80 0.88 6 0.	0.46 0.67 0.21 1.35 3.70 0.63 1.25 0.33 1.96		Riparian Acreage	Age Status	Access	Avg Height (m)	Photo Reference Number	Cotto	Russian Olive	<b>6</b> )
1,154	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	1,543   20   1,057   24   24   25   25   25   25   25   25	2.24 30 0.43 50 11.94 50 2.11 30 12.53 10 6.63 5 5.8,72 70 34.14 30 0.44 80 0.67 40 7.44 40 7.66 40 7.66 40 7.66 40 7.66 40 7.66 40 7.66 40 7.66 40 7.61 30 7.74 40 9.32 80 6.32 50 6.32 50 6.33 60 6.31 60 6.	0.67 0.21 1.35 3.70 0.63 1.25 0.33 1.96	100	0.00	mature	pood		. 51		du .	
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1,10	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	2.11 30 6.63 5 6.63 10 6.63 5 39.12 70 34.14 30 0.44 80 0.44 80 7.66 40 7.66 40 7.61 30 7.61 3	0.63 1.25 0.33 1.96	20	9.26	mature	poof	N	63		۵	
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4 (7)         4 (4)         4 (4) <th< td=""><td>4 (77)         3 (7)         2 (8)         5 (2)         3 (2)         <t< td=""><td>4 of 7         3 of 1         2 sd 2         5 of 3         mature speed***         9 od 3         6 of 0         np p pop pop pop pop pop pop pop pop pop</td><td>4.07 7.44 9.32 2.29 2.29 0.85 62.13 52.13 1.37 1.02 0.63 0.63</td><td>2.28</td><td>20 20</td><td>3.80</td><td></td><td>poot.</td><td></td><td></td><td></td><td></td><td></td></t<></td></th<>	4 (77)         3 (7)         2 (8)         5 (2)         3 (2) <t< td=""><td>4 of 7         3 of 1         2 sd 2         5 of 3         mature speed***         9 od 3         6 of 0         np p pop pop pop pop pop pop pop pop pop</td><td>4.07 7.44 9.32 2.29 2.29 0.85 62.13 52.13 1.37 1.02 0.63 0.63</td><td>2.28</td><td>20 20</td><td>3.80</td><td></td><td>poot.</td><td></td><td></td><td></td><td></td><td></td></t<>	4 of 7         3 of 1         2 sd 2         5 of 3         mature speed***         9 od 3         6 of 0         np p pop pop pop pop pop pop pop pop pop	4.07 7.44 9.32 2.29 2.29 0.85 62.13 52.13 1.37 1.02 0.63 0.63	2.28	20 20	3.80		poot.					
7.44         4.0         2.38         3.9         2.4         4.0         2.38         3.0         7.44         minute         9000         2         0 <t< td=""><td>7.44         4.0         2.96         3.0         7.4         minute         9000         2         0</td><td>7.44         40         2.56         30         7.64         matters         good         2         0         np         np           2.28         50         1.14         20         1.65         matters         good         2         0         np         np           2.28         5         0.04         80         1.14         20         1.65         matters         good         2         0         np         p           2.28         5         0.04         80         1.17         matters         good         2         0         p         p         p           2.24         5         0.04         80         1.77         matters         good         2         0         p         p         p           2.34         5.0         0.26         90         0.26         poor         1.76         matters         poor         2         60         p</td><td>7.44 9.32 2.29 2.29 0.85 62.13 6.51 1.37 1.29 1.02 0.63</td><td>1.22</td><td>20</td><td>2.03</td><td>1</td><td>**poo6</td><td>٣</td><td>. 08</td><td></td><td>du</td><td></td></t<>	7.44         4.0         2.96         3.0         7.4         minute         9000         2         0	7.44         40         2.56         30         7.64         matters         good         2         0         np         np           2.28         50         1.14         20         1.65         matters         good         2         0         np         np           2.28         5         0.04         80         1.14         20         1.65         matters         good         2         0         np         p           2.28         5         0.04         80         1.17         matters         good         2         0         p         p         p           2.24         5         0.04         80         1.77         matters         good         2         0         p         p         p           2.34         5.0         0.26         90         0.26         poor         1.76         matters         poor         2         60         p	7.44 9.32 2.29 2.29 0.85 62.13 6.51 1.37 1.29 1.02 0.63	1.22	20	2.03	1	**poo6	٣	. 08		du	
2.25         50         114         20         118         mature         good         2         61         p         P           2.213         5         0.04         80         1.05         mature         good         2         62         9         P         P           2.213         6.28         0.04         80         0.17         mature         good         2         62         9         P         P           2.214         50         0.04         80         0.17         mature         good         2         66         P         P         P           2.21         50         0.28         50         0.06         90         0.06         P         P         P         P           1.57         50         0.28         50         0.06         90         0.06         P	2.23         6.0         114         2.0         155         mature         good         2         81         P         P         P           5.28         5         0.04         9.0         1.05         mature         good         2         82         P         P         P           5.27.13         5         0.04         9.0         0.17         mature         good         2         82         P         P         P           2.2.14         5         0.04         9.0         0.17         mature         good         2         82         P         P         P           2.2.14         5         0.04         1.78         mature         poor         2         86         TP         P         P           2.2.1         5         0.05         1.14         poor         2         86         TP         P         P           2.7.2         5         0.05         1.04         1.18         mature         poor         2         80         P         P         P           2.7.2         5         0.24         4.44         mature         poor         2         83         P         P <td< td=""><td>2.27         6.0         114         2.0         183         mature         good         3         81         P         P           6.28         5         0.24         80         0.17         mature         good         2         82         P         P         P           6.28         5         0.04         80         0.17         mature         good         2         82         P         P         P           2.54         5         0.04         80         0.17         mature         good         2         82         P         P         P           2.54         5         0.04         1.76         mature         poor**         2         83         P         P         P           2.54         5         0.26         5         0.05         mature         poor**         2         83         P         P         P           2.53         5         0.14         3         0.14         poor**         2         83         P         P         P           4.65         5         0.14         3         0.14         poor**         4.48         mature         poor**         2         83</td><td>2.26 2.26 5.26 0.85 <b>52.13</b> 52.13 1.37 1.29 1.02 0.63</td><td>2.98</td><td>R 5</td><td>7.46</td><td>mature</td><td>poob</td><td>). VI</td><td>0</td><td></td><td>du</td><td></td></td<>	2.27         6.0         114         2.0         183         mature         good         3         81         P         P           6.28         5         0.24         80         0.17         mature         good         2         82         P         P         P           6.28         5         0.04         80         0.17         mature         good         2         82         P         P         P           2.54         5         0.04         80         0.17         mature         good         2         82         P         P         P           2.54         5         0.04         1.76         mature         poor**         2         83         P         P         P           2.54         5         0.26         5         0.05         mature         poor**         2         83         P         P         P           2.53         5         0.14         3         0.14         poor**         2         83         P         P         P           4.65         5         0.14         3         0.14         poor**         4.48         mature         poor**         2         83	2.26 2.26 5.26 0.85 <b>52.13</b> 52.13 1.37 1.29 1.02 0.63	2.98	R 5	7.46	mature	poob	). VI	0		du	
5.56         5         0.26         60         105         mature         9000d         2         62         P         P           27.13         18.05         0.27         mature         9000d         2         62         P         P         P           27.14         20.73         mature         9000         2         66         P         P         P           1.57         50         0.26         90         0.26         90         0.67         2         86         P         P           1.57         50         0.14         50         0.74         mature         9000         2         86         P         P           1.57         50         0.15         60         0.56         90         0.67         2         86         P         P           1.07         1.07         1.04         1.00         1.00         1.00         1.00         P           1.07         1.04         60         0.13         mature         9000         2         86         P         P           2.73         30         1.26         30         1.48         1.00         1.00         P	5.26         5         0.26         80         1.75         mature         good         2         0.2         P         P           5.21         5         0.24         80         1.75         mature         good         2         0.2         P         P           5.21         4         1.7         mature         poor**         2         0.2         P         P           1.3         50         0.26         50         0.26         poor**         2         0.6         P         P           1.3         50         0.26         1.14         60         0.26         poor**         2         0.6         P         P           1.2         50         0.26         1.14         60         0.64         poor**         2         83         P         P           2.3         50         0.13         mature         good**         2         83         P         P           2.73         1         6         0.13         mature         good**         2         83         P         P           2.73         1         4.43         1.143         1.143         1.144         1.144         1.144	5.26         5         0.26         80         1.15         matter         good         2         0.2         P         P         P           5.27.13         6.04         80         1.15         matter         good         2         0.2         P         P         P           5.27.14         1.6.05         30.73         matter         good         2         0.2         P <t< td=""><td>5.26 0.85 <b>52.13</b> 2.94 0.51 1.23 1.02 0.63</td><td>1,14</td><td>20</td><td>1.83</td><td>mature</td><td>poof</td><td>რ</td><td>81</td><td></td><td><del>2</del> 8</td><td></td></t<>	5.26 0.85 <b>52.13</b> 2.94 0.51 1.23 1.02 0.63	1,14	20	1.83	mature	poof	რ	81		<del>2</del> 8	
2 94         50         14.05         30.73         Relute         poor         2         66         Top         P           0.51         50         0.26         50         0.26         poor**         2         66         Top         P           1.37         50         0.26         50         0.66         poor**         2         66         P         P           1.37         50         0.61         50         0.61         mature         poor**         2         68         P         P           1.05         50         0.51         mature         poor**         2         87         P         P           2.73         4.25         4.48         mature         poor**         2         87         P         P           4.56         50         1.366         mature         poor**         2         87         P         P           2.73         4         50         1.183         mature         poor**         2         87         P         P           2.84         50         1.183         mature         poor**         2         87         P         P           5.44         5	254         50         147         40         176         mature         poor*         2         86         np         P           1.37         50         0.66         50         0.26         50         0.73         nmature         poor**         2         86         np         P           1.37         50         0.66         50         0.66         50         0.66         90         174         poor***         2         86         np         P           1.27         50         0.66         50         0.66         50         1.74         poor***         2         83         p         p         p           1.02         50         0.66         0.73         mature         900d**         2         87         p         p         p           2.73         1.00         2.26         1.365         mature         900d         2         87         p         p         p           2.84         1.0         2.28         90         1.4183         mature         900d**         2         87         p         p           2.84         1.0         2.24         50         1.407         mature <td< td=""><td>2.94         5.0         14.7         4.0         1.76         Inalure         poor**         2         86         np         P           0.51         5.0         0.26         90         0.26         poor**         2         86         np         P           1.37         5.0         0.66         50         0.74         poor**         2         86         np         P         P           1.02         5.0         0.14         50         0.74         mature         poor**         2         87         P         P         P           1.02         5.0         0.19         50         0.73         mature         good         2         87         P         P         P           2.73         4.56         50         13.86         mature         good         2         87         P         P         P           2.73         10         2.26         50         14.82         mature         good         2         87         P         P         P           2.74         50         1.68         50         2.26         50         14.02         90         P         P           2.73</td><td>52.13 2.94 0.51 1.02 0.63 8.75</td><td>0.26</td><td>80</td><td>1.05 0.17</td><td>mature mature</td><td>poofi poofi</td><td></td><td>82 82</td><td></td><td>t &amp;</td><td></td></td<>	2.94         5.0         14.7         4.0         1.76         Inalure         poor**         2         86         np         P           0.51         5.0         0.26         90         0.26         poor**         2         86         np         P           1.37         5.0         0.66         50         0.74         poor**         2         86         np         P         P           1.02         5.0         0.14         50         0.74         mature         poor**         2         87         P         P         P           1.02         5.0         0.19         50         0.73         mature         good         2         87         P         P         P           2.73         4.56         50         13.86         mature         good         2         87         P         P         P           2.73         10         2.26         50         14.82         mature         good         2         87         P         P         P           2.74         50         1.68         50         2.26         50         14.02         90         P         P           2.73	52.13 2.94 0.51 1.02 0.63 8.75	0.26	80	1.05 0.17	mature mature	poofi poofi		82 82		t &	
2.94         50         147         40         1.76         mature         poor**         2         66         np         P           2.29         50         0.26         50         0.26         50         0.66         poor**         2         66         np         p         p           2.29         50         0.64         50         0.64         50         0.64         poor**         2         83         p         p           2.29         50         0.64         50         0.64         50         0.64         poor**         p         p         p           2.29         50         0.64         50         0.64         50         0.64         p         p         p           2.23         4.48         mature         good         2         87         p         p         p           2.731         50         1.185         mature         good         2         87         p         p         p           3.942         70         1.183         mature         good         2         90         p         p         p           5.59         2.1         50         1.405	2.94 5.6 147 4.0 1.76 mature proof 2 86 mp p p p p p p p p p p p p p p p p p p	2.54 5.0 (147 4.0 (176 mature poor**) 2.54 5.0 (0.28 5.0 (0.86 poor**) 2.29 5.0 (0.68 5.0 (0.86 poor**) 2.29 5.0 (0.69 5.0 (0.89 poor**) 2.29 5.0 (0.61 5.0 (0.69 poor**) 2.29 5.0 (0.61 5.0 (0.61 5.0 (0.61 poor**) 2.29 5.0 (0.61 poor**) 2.20 5.0 (0.61 poor**) 2.21 5.0 (0.61 poor**) 2.22 5.0 (0.61 poor**) 2.24 5.0 (0.61 poor**) 2.25 6.0 (0.61 poor**) 2.26 (0.61 poor**) 2.27 5.0 (0.61 poor**) 2.28 6.0 (0.61 poor**) 2.29 5.0 (0.61 poor**) 2.20 6.0 (0.61 poor**) 2.21 6.0 (0.61 poor**) 2.22 5.0 (0.61 poor**) 2.24 5.0 (0.61 poor**) 2.25 6.0 (0.61 poor**) 2.26 (0.61 poor**) 2.27 5.0 (0.61 poor**) 2.28 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.20 6.0 (0.61 poor**) 2.21 6.0 (0.61 poor**) 2.21 6.0 (0.61 poor**) 2.22 6.0 (0.61 poor**) 2.24 6.0 (0.61 poor**) 2.24 6.0 (0.61 poor**) 2.25 6.0 (0.61 poor**) 2.26 (0.61 poor**) 2.27 6.0 (0.61 poor**) 2.28 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.20 6.0 (0.61 poor**) 2.20 6.0 (0.61 poor**) 2.21 6.0 (0.61 poor**) 2.22 6.0 (0.61 poor**) 2.24 6.0 (0.61 poor**) 2.25 6.0 (0.61 poor**) 2.26 (0.61 poor**) 2.27 6.0 (0.61 poor**) 2.28 6.0 (0.61 poor**) 2.29 6.0 (0.61 poor**) 2.20 6.0 (	2.34 0.51 1.37 1.02 0.63 8.75	18.05		30.73							
2 94         50         147         40         1.76         mature         poor**         2         66         np         Poor**	2 94         50         147         40         176         mature         poor**         2         66         noth           0 51         50         0.26         0.26         0.06*         50         0.06*         0.00***         0         0         0         0.00***         0	294         50         147         40         176         mature         poor**         2         66         not**         Poor**         Poor** <td>2.94 0.51 1.37 2.29 1.02 0.63</td> <td></td>	2.94 0.51 1.37 2.29 1.02 0.63										
10.51 5.90 0.26 5.00 0.26 1.14 poor**  2.29 5.00 1.14 poor** 2.29 5.00 1.14 poor** 2.29 5.00 1.14 poor** 2.29 5.00 1.14 poor** 2.29 5.00 1.24 poor** 2.29 5.00 1.24 poor** 2.29 5.00 1.25 poor** 2.731 5.00 1.25 poor** 2.731 5.00 1.25 poor** 2.804 2.00 1.26 poor** 2.804 2.00 1.18 poor** 2.805 2.00 1.18 poor** 2.805 2.00 1.18 poor** 2.805 2.00 1.18 poor** 2.806 2.00 1.18 poor** 2.807 2.00 1.18 poor** 2.808 2.00 1.18 poor** 2.809 2.00 1.18 poor** 2.809 2.00 1.18 poor** 2.8000 2.00 1.18 poor*	0.51         50         0.26         6.05         poor**         Proof**	0.51         50         0.26         50         0.68         50         0.68         50         0.68         50         0.68         50         0.68         1.14         50         1.14         500         500 <th< td=""><td>0.55 1.37 2.29 1.02 0.63 8.75</td><td>1.47</td><td>40</td><td>1.76</td><td>mature</td><td>poor</td><td>2</td><td>98</td><td></td><td>du</td><td></td></th<>	0.55 1.37 2.29 1.02 0.63 8.75	1.47	40	1.76	mature	poor	2	98		du	
1,37         5.0         0.68         5.0         0.68         poor**	137 50 068 50 048 poor. 102 50 114 50 061 114 poor. 103 50 051 50 051 poor. 104 50 051 60 051 poor. 1053 30 051 50 051 80 051 poor. 1054 50 051 60 051 poor. 1055 50 138  mature good 2 87 pp pp poor. 1055 50 228 mature good 2 90 pp	1.37         5.0         0.66         5.0         0.184         poor**         8.3         p         p           1.62         5.0         1.14         5.0         0.51         mature         poor**         2         83         p         p         p           0.63         5.0         0.51         mature         good         2         87         p         p         p           2.731         5.0         13.65         6.0         13.65         mature         good         2         87         p         p         p           2.734         5.0         13.65         mature         good         2         87         p         p         p           2.804         10         2.28         50         14.02         mature         good         2         87         p         p         p           2.804         30         1.68         50         14.02         mature         good         2         90         p         p         p           2.737         30         2.21         50         14.07         mature         good         2         90         p         p           8.60         2.0 </td <td>1.37 2.29 1.02 0.63 8.75</td> <td>0.26</td> <td>8</td> <td>0.26</td> <td></td> <td>poor.</td> <td></td> <td></td> <td></td> <td></td> <td></td>	1.37 2.29 1.02 0.63 8.75	0.26	8	0.26		poor.					
1.22         50         0.51         60         0.51         mature         poor**         2         83         p         P           0.63         3.0         0.19         80         0.13         mature         900d         2         87         p         P           8.75         4.25         80         13.65         mature         900d         2         87         p         P           2.804         20         11.83         mature         900d         2         87         p         P           2.804         20         1.68         2.79         mature         900d         2         90         p         P           2.804         20         1.68         2.79         mature         900d         2         90         p         P           2.804         20         2.79         mature         900d         2         90         p         P           2.345         30         1.74         mature         900d         2         91         p         P           8.60         20         1.74         1.80         mature         900d         2         92         P         P	1,22         50         0.51         60         0.51         mature         poor*         2         83         p         p           0,63         30         0.15         mature         good         2         83         p         p           8/75         4.25         4.48         mature         good         2         87         p         p           27.31         50         13.65         mature         good         2         87         p         p           4.56         50         2.28         mature         good         2         87         p         p           2.8.04         50         2.78         mature         good         2         80         p         p           5.80         1.68         50         1.73         mature         good         2         90         p         p           7.37         30         2.21         50         1.43         mature         good         2         90         p         p           8.60         20         4.30         mature         good         2         93         p         p           8.60         20         4.30	1,02         50         0.51         poor**         2         83         p         p           0,63         3.0         0.19         80         0.13         mature         good         2         83         p         p           8.75         4.25         4.25         mature         good         2         87         p         p           2.731         50         13.65         70         11.83         mature         good         2         87         p         p           2.804         20         2.28         50         14.02         mature         good         2         87         p         p           2.804         20         2.58         30         14.02         mature         good         2         87         p         p           2.804         20         2.59         mature         good         2         90         p         p           2.345         30         7.04         4.0         14.07         mature         good         2         91         p         p           2.345         30         7.46         50         4.30         mature         good         2         9	1.02 0.63 0.63	0.68	2 2	1.14		. <b>t</b> . 000					
6.53         3.0         0.19         80         0.13         mature         good         2         83         P         P           8.75         4.25         4.48         mature         good         2         87         p         p         p           2.731         50         13.65         mature         good         2         87         p         p         p           4.56         50         2.28         mature         good         2         87         p         p         p           5.84         50         2.73         mature         good         2         87         p         p         p           7.37         30         2.21         50         14.02         mature         good         2         90         p         p         p           7.37         30         2.21         2.0         5.90         mature         good         2         91         p         p         p           8.60         2.0         4.30         mature         good         2         92         p         p         p           8.60         2.0         4.30         4.30         mature         <	6.63         3.0         0.19         80         0.13         mature         good         2         83         P         P           8.75         4.25         4.48         mature         good         2         87         P         P           27.31         50         13.65         mature         good         2         87         P         P           27.31         50         14.02         mature         good         2         87         P         P           28.04         10         3.94         70         14.02         mature         good         2         87         P         P           28.04         10         3.94         70         14.02         mature         good         2         87         P         P           28.04         20         50         14.02         mature         good         2         91         P           20.45         30         172         40         14.07         mature         good         2         91         P           860         20         4.30         18.66         mature         good         2         93         P         P	6.63         3.0         0.19         80         0.13         mature         good         2         83         P         P           8.75         4.25         4.48         mature         good         2         87         P         P           27.31         50         13.65         mature         good         2         87         P         P           27.34         10         3.94         70         11.83         mature         good         2         87         P         P           28.04         20         14.02         14.02         mature         good         2         87         P         P           7.37         30         2.21         20         14.02         mature         good         2         90         P         P           23.45         30         1.72         50         4.0         14.07         mature         good         2         91         P         P           860         20         1.72         50         4.0         14.07         mature         good         2         93         P         P           87.32         20         1.25         30         1.8	0.63	0.51	205	0.51		poor				į	
8.75         4.25         mature         good         2         87         p         P           27.31         50         13.65         mature         good         2         87         p         P           4.56         50         2.28         mature         good         2         87         p         P           4.56         50         11.83         mature         good         2         90         p         P           2.804         20         5.61         14.02         mature         good         2         90         p         P           2.80         30         1.68         5.90         mature         good         2         91         p         P           2.73         30         7.04         4.0         14.07         mature         good         2         91         p         P           8.60         20         1.72         50         18.66         mature         good         2         92         p         P           8.60         20         1.72         50         18.66         mature         good         2         93         p         P           8.60	8.75         4.26         6.0         13.65         6.0         13.65         6.0         13.65         6.0         13.65         6.0         13.65         mature         good         2         87         p         p         p           27.31         5.0         2.28         13.65         mature         good         2         87         p         p         p           38.45         5.0         2.28         7.79         mature         good         2         90         p         p         p           5.64         5.61         5.61         5.0         mature         good         2         90         p         p         p           7.37         3.0         1.17         2.0         5.90         mature         good         2         91         p         p           8.60         2.0         4.30         mature         good         2         93         p         p           9.33         5.0         18.66         mature         good         2         93         p         p           9.33         7.46         5.0         18.66         mature         good         2         93         p	8.75         4.25         4.44         mature         good         2         87         p         P           27.31         50         13.65         mature         good         2         87         p         p           4.56         50         2.28         50         11.83         mature         good         2         87         p         p           2.84         10         3.94         70         11.83         mature         good         2         87         p         p           2.84         10         3.94         70         14.02         good***         2         90         p         p         p           2.85         30         1.68         50         14.02         mature         good***         2         91         p         p           2.74         40         14.07         mature         good***         2         93         p         p           8.60         20         7.46         50         18.66         mature         good***         2         93         p         p           46.1.66         45.59         mature         good         2         93         p	**************************************	0.19	. 08	0.13	mature	poof	64	83		di	
27.31         50         13.65         60         13.65         mature         good         2         87         p         P           4.56         50         2.28         mature         good         2         87         p         p           3.94         70         11.83         mature         good         2         90         p         p           28.04         20         5.61         4.02         11.63         mature         good         2         90         p         p           5.59         30         1.68         5.0         1.402         mature         good         2         91         p         p           2.345         30         7.04         40         14.07         mature         good         2         91         p         p           8.60         20         1.74         50         18.66         mature         good         2         93         p         p         p           37.32         20         7.46         50         18.66         mature         good         2         93         p         p         p           37.32         20         7.46         50 <td>27.31         50         13.65         60         13.65         mature         good         2         87         p         P           4.56         50         2.28         mature         good         2         87         p         p           3.94         70         11.83         mature         good         2         90         p         p           2.8.04         20         5.61         5.0         14.02         mature         good         2         90         p         p           5.59         30         7.34         40         14.02         mature         good         2         91         p         p           2.345         30         7.04         40         14.07         mature         good         2         91         p         p           8.60         20         7.146         50         18.66         mature         good         2         93         p         p           8.50         7.45         50         18.66         mature         good         2         93         p         p           8.51         7.45         50         18.66         mature         good</td> <td>27.31         50         13.65         mature         good         2         87         p         P           4.56         50         2.28         50         2.28         70         11.83         mature         good         2         87         p         P           28.04         20         2.28         70         11.83         mature         good         2         87         p         P           5.89         30         1.68         50         14.02         mature         good         2         90         p         P           7.34         30         2.21         20         5.79         mature         good         2         91         p         P           8.60         20         4.30         mature         good         2         91         p         P           8.60         2.0         4.30         mature         good         2         93         p         P           8.50         7.46         50         18.66         mature         good         2         93         p         P           181.66         4.59         mature         good         2         93         p<td></td><td>4.25</td><td></td><td>4.48</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td>	27.31         50         13.65         60         13.65         mature         good         2         87         p         P           4.56         50         2.28         mature         good         2         87         p         p           3.94         70         11.83         mature         good         2         90         p         p           2.8.04         20         5.61         5.0         14.02         mature         good         2         90         p         p           5.59         30         7.34         40         14.02         mature         good         2         91         p         p           2.345         30         7.04         40         14.07         mature         good         2         91         p         p           8.60         20         7.146         50         18.66         mature         good         2         93         p         p           8.50         7.45         50         18.66         mature         good         2         93         p         p           8.51         7.45         50         18.66         mature         good	27.31         50         13.65         mature         good         2         87         p         P           4.56         50         2.28         50         2.28         70         11.83         mature         good         2         87         p         P           28.04         20         2.28         70         11.83         mature         good         2         87         p         P           5.89         30         1.68         50         14.02         mature         good         2         90         p         P           7.34         30         2.21         20         5.79         mature         good         2         91         p         P           8.60         20         4.30         mature         good         2         91         p         P           8.60         2.0         4.30         mature         good         2         93         p         P           8.50         7.46         50         18.66         mature         good         2         93         p         P           181.66         4.59         mature         good         2         93         p <td></td> <td>4.25</td> <td></td> <td>4.48</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		4.25		4.48							
27.31         50         73.65         50         73.65         50         73.65         50         73.65         50         73.65         70         11.83         mature         good         2         87         p <td>27.31         50         73.65         50         73.65         50         73.65         50         73.65         50         2.28         60         2.28         70         11.83         mature         good         2         87         p         p         p           28.04         20         5.61         5.0         14.02         mature         good         2         90         p         &lt;</td> <td>27.31         50         73.65         50         73.65         50         73.65         50         73.65         50         73.65         70         11.83         mature         good         2         87         p<td></td><td></td><td>į</td><td>1</td><td>,</td><td>ţ</td><td></td><td>87</td><td></td><td>Q</td><td></td></td>	27.31         50         73.65         50         73.65         50         73.65         50         73.65         50         2.28         60         2.28         70         11.83         mature         good         2         87         p         p         p           28.04         20         5.61         5.0         14.02         mature         good         2         90         p         <	27.31         50         73.65         50         73.65         50         73.65         50         73.65         50         73.65         70         11.83         mature         good         2         87         p <td></td> <td></td> <td>į</td> <td>1</td> <td>,</td> <td>ţ</td> <td></td> <td>87</td> <td></td> <td>Q</td> <td></td>			į	1	,	ţ		87		Q	
3.9.4         70         11.83         mature         good         2         90         p         P           28.04         20         561         56         14.02         mature         good**         2         90         p         P           28.04         20         56         14.02         mature         good**         2         91         p         P           559         30         77.04         40         14.07         mature         good**         3         92         p         P           8.60         20         172         50         18.66         mature         good**         2         93         p         P           37.32         20         7.46         50         18.66         mature         good**         2         93         p         P           181.66         45.59         87.50         87.50         P         P         P	3.9.4         10         3.94         70         11.83         mature         good         2         90         p         p           28.04         20         5.61         5.0         14.02         good**         2         90         p         p           5.59         30         1.68         5.90         mature         good**         3         92         p         p           2.345         30         7.04         40         14.07         mature         good**         3         92         p         p         p           8.60         20         1.72         50         18.66         mature         good**         2         93         p         p         p           37.32         20         7.46         50         18.66         mature         good**         2         93         p         p           181.66         45.59         45.59         87.50         p         p         p	3.9.4         10         3.94         70         11.83         mature         good**         2         90         p         P           2.8.04         20         5.61         5.6         14.02         good**         2         91         p         P           2.8.04         20         5.90         mature         good**         2         91         p         P           7.3.45         30         7.04         40         14.07         mature         good**         3         92         p         P         P           8.60         20         1.72         50         18.66         mature         good**         2         93         p         P           7.3.5         20         7.46         50         18.66         mature         good**         2         93         p         P           16.6         45.59         87.50         87.50         p         P         P	27.31 4.56	13.65 2.28	3 8	13.50	mature	oog goog	. 24	78		. Cr	
28.04         20         561         56         14.02         good**         good**         p p p p p p p p p p p p p p p p p p p	28.04         20         561         60         14.02         good**         good**         p p p p p p p p p p p p p p p p p p p	28.04         20         561         56         14.02         good***         good***         91         p         P           5.59         30         2.21         2.79         mature         good         3         92         p         P           23.45         30         7.04         40         14.07         mature         good         3         92         p         P           8 60         20         172         50         18.66         mature         good**         2         93         p         P           161.66         45.59         87.50         87.50         7         93         p         P	39.42	3.94	2	11.83	mature	pood	C4	06		QL CL	
5.59         3.0         7.68         5.9         Final Line         900d         2         91         p         P           7.37         3.0         7.64         4.0         14.07         mature         900d         3         92         p         p         p           2.3.45         3.0         1.72         5.0         4.30         mature         900d         2         92         p         p         p           37.32         2.0         7.46         5.0         18.66         mature         900d         2         93         p         p           181.66         45.59         87.50         87.50         p         p         p	5.59 3.0 1.68 5.90 mature good 2 91 p p p p p p p p p p p p p p p p p p	5.59         3.0         7.18         5.9         mature         good         2         91         p         P           7.37         30         7.24         40         14.07         mature         good         3         92         p         p         p           23.45         30         7.04         40         14.07         mature         good         2         93         p         p         p           8 60         20         7.46         50         18.66         mature         good         2         93         p         p         p           181.66         37.32         45.59         87.50         87.50         p         p         p	28.04	5,61	8	14.02		pood					
23.45         30         7.04         40         14.07         mature         good         3         92         P         P           8.60         20         1.72         50         4.30         good         2         93         p         P           37.32         20         7.46         50         18.66         mature         good         2         93         p         p           181.66         45.59         87.50         87.50         P         P         P	23.45         30         7.04         40         14.07         mature         good         3         92         P         P           8.60         20         1.72         50         4.30         good         2         93         p         P           37.32         20         7.46         50         18.66         mature         good         2         93         p         p           181.66         45.59         87.50         87.50         87.50         g         93         p         p	23.45         30         7.04         40         14.07         mature         good         3         92         P         P           8.60         20         172         50         43.0         good         2         93         p         P           37.32         20         7.46         50         18.66         mature         good         2         93         p         P           161.66         45.59         87.50         87.50         87.50         P         P	5.59	2.21	<b>8</b> 8	5.90	mature	900g	2	91		du :	
8 60 20 1/72 <b>50</b> 4:30 good 2 93 p p p 37:32 20 7:46 50 18.66 mature good 2 93 p p	8 60 20 1/72 <b>50</b> 4:30 good 2 93 p p p 37:32 20 7:46 50 18.66 mature good 2 93 p p	8 6 0 2 0 1/7	23.45	7.04	40	14.07	mature	poof		85		đ	
187.65	187.65	181.66	8.60 37.32	7.46	<b>3</b> &	18.66	mature	poof		93		đ.	
				45.59		87 50						The state of the s	1
			_										
										£			

Purgatoire Table 3: Purgatoire River & Tributaries - Tamarisk Infestation Attribute Data

Agreeage         Percent Cover         Agreeage         Percent Agreeage         Percent Agreeage         Percent Agreeage         Agraeage				rurgaron	re rable 5.	- urgatone	עוועפו פע ווויזים	(d) (co - ) (a)	Purgatoire Table 3. Purgatoire Kiver & Hibutalies - Lamanson mestavin	Photo Defenda		
11.10   2.0   2.24   80   6.59   9000°°°   9000°°°   9000°°°   9000°°   9	Reference Name	Acreage	Percent Cover	Canopy Coverage Acreage	Percent Upland	Riparian Acreage	Age Status	Access	Ava Height (m)	Number	Cottonwood Willow present (p)/not pres	Russian Olive sent (np)
11   11   12   12   12   13   14   15   15   15   15   15   15   15	Trinchera Creek		,	;	į	i t		# (0)				
1721   24	pi35	11.19	8,8	2.24	3 5	2.0g		poof.				
17.21   2.0   2.0   2.5   2.0   2.	piso pi37	0.05	90	0.04	3 23	0.02		poob.				
2.07         2.0         0.59         6.0         1.49         prov.**           4.51         4.0         4.71         6.0         5.0         0.50         0.50           4.51         2.0         0.6         4.71         6.0         0.6         0.6         0.6           4.51         2.0         0.7         1.177         6.0         0.6         0.7         0.0           4.6.4         2.0         0.7         2.2         2.0         0.7         0.0         0.0           5.6         2.0         0.1         2.2         2.0         0.0         0.0         0.0         0.0           6.6         2.0         0.1         2.0         0	ubtotal	17.21		3.47		8.61				•	And the state of t	WV
11.77	ng Arroyo							:				
1177   40	pi61	2.97	20	0.59	20	1.49		poor*				
451         20         0.88         9.24         Door           6.63         20         117         9.9         4.25         Door           10,74         20         1.17         9.9         4.25         Door           10,74         20         1.17         9.9         4.26         Door           6.84         20         1.27         9.9         5.29         Door           6.84         20         2.24         5.9         5.29         Door           6.84         20         0.22         5.9         1.00         Door           6.84         20         0.70         1.00         1.00         Door           6.85         20         0.70         1.00         1.00         Door           6.84         20         0.70         1.00         1.00         Door           6.85         20         0.70         1.00         1.00         Door           6.85         20         0.70         1.00         1.00         Door           6.86         20         0.70         1.00         1.00         Door           6.87         20         0.70         1.00         1.00         Door </td <td>pi62</td> <td>11.77</td> <td>40</td> <td>4.71</td> <td>20</td> <td>5.89</td> <td></td> <td>pood</td> <td></td> <td></td> <td></td> <td></td>	pi62	11.77	40	4.71	20	5.89		pood				
16.85   70   1175   828   8452   December   16.87   15.87	pi63	4.51	20	0.90	05	2.25		bood				
10,74   50   5,77   50   5,77   50   5,77   50   5,77   50   5,77   50   5,77   50   5,77   50   5,77   50   5,77   50   5,77	pi64	9.63	20	1.93	0 G	4.82		, , , ood				
11 (1)         20         2.24         55.99         Door***           5.59         2.20         5.59         Door***           6.59         2.20         2.24         5.59         Door***           6.50         2.20         1.75         5.59         Door***           6.52         2.20         1.75         5.50         Door***           6.52         2.20         1.75         5.00         Door***           5.40         2.00         1.71         5.00         Door***           5.54         2.00         1.77         5.00         Door***           5.56         2.00         1.77         5.00         Door***           6.57         2.00         1.77         5.00         Door***           6.58         2.00         1.77         5.00         Door***           6.59         2.00         1.77         5.00         Door***           6.50         2.24         5.00         Door***         Door***           6.50         2.00         1.77         5.00         Door***           6.50         2.00         1.77         5.00         Door***           6.50         2.00         1.77	99fd 99fd	16.82	70 50	5.37	8 05	5.37		**************************************				
11   10   20   2.24   810   5.50   1000****   Control   100   100   100   100   1000***   Control   100   100   100   100   100   1000***   Control   100   100   100   100   100   1000***   Control   110   100   100   100   1000***   Control   111   100   100   100   1000***   Control   111   100   100   100   1000***   Control   111   100   100   1000***   Control   112   100   100   1000***   Control   100   100   100   1000***   Control	ubtotal	56.44		25.27		28.22					Manual designation of the first	سالة المُوارِدُ فِي المُرْدِيدُ وَالْمُرْدِيدُ مِنْ وَالْمُوارِدِيدُ مِنْ مِنْ الْمُوارِدِيدِ مِنْ الْمُوارِدِ
111         20         2.24         80         5.59         Door**           0.04         30         1.20         9.09         Door**           0.05         30         0.04         50         0.02         Door**           5.44         30         1.75         50         0.22         Door**           5.45         20         1.77         50         2.77         Door**           5.45         20         0.70         2.74         Door**           5.46         20         1.77         50         2.77         Door**           5.49         20         0.70         2.44         Door**         Door**           4.5.22         1.041         20         2.77         Door**         Door**           4.5.24         20         0.70         2.44         Door**         Door**           5.49         20         1.74         2.44         Door**         Door**           5.49         20         0.74         2.44         Door**         Door**           5.44         20         0.74         2.44         Door**         Door**           6.54         20         0.74         2.44         Door**	smer Arroyo											
5 98         20         1 20         560         Door**           1 07         30         0 42         58         0 52         poor**           5 1 17         50         0 52         poor**         poor**           6 22         20         1 17         50         2 17         poor**           5 46         20         1 17         50         1 74         poor**           46.32         20         1 17         50         2 24         poor**           5 66         20         1 17         50         2 24         poor**           1 11         50         2 24         56         poor**           5 66         20         2 24         50         poor**           1 11         50         2 24         56         poor**           1 11         50         2 24         50         poor**           1 10         50         2 24         poor**         poor**           1 10         50         2 24         poor**         poor**           1 10         50         1 27         poor**         poor**           1 20         1 20         1 24         poor**         poor**	pi35	11 19	20	2.24	50	5.59		poor**				
0.05         0.0 <td>pi36</td> <td>5.98</td> <td>20</td> <td>1.20</td> <td>20</td> <td>2.99</td> <td></td> <td>poor,</td> <td></td> <td></td> <td></td> <td></td>	pi36	5.98	20	1.20	20	2.99		poor,				
107         30         0.32         54         0.53         poor**           5.44         20         1.76         50         2.82         poor**           5.44         20         1.76         50         2.74         poor**           5.86         20         1.17         50         2.74         poor**           4.5.32         1.04         50         2.74         poor**           4.5.32         1.04         50         2.98         poor**           4.5.32         1.04         2.24         50         2.99         poor**           5.96         20         1.04         50         2.99         poor**           1.07         50         2.99         poor**         poor**           1.07         50         2.99         poor**           1.07         50         2.92         poor**           6.24         20         1.74         poor**           6.25         20         1.74         poor**           6.26         20         1.74         poor**           6.54         20         1.74         poor**           6.67         50         1.74         poor**      <	pi37	0.05	80	0.04	20	0.02		pood				
6.34         3.0         1,70         5.0         2.2         poor*           5.54         2.0         1,11         5.0         2.7         poor*           5.64         2.0         1,17         5.0         1.74         poor*           5.86         2.0         1,17         5.0         1.74         poor*           11.13         2.0         1,17         5.0         1.74         poor**           5.86         2.0         1,04         2.24         poor**           1.07         3.0         1.24         poor**           5.86         2.0         1.75         5.0         poor**           6.32         3.0         1.74         poor**         poor**           5.6         2.0         1.74         poor**         poor**           6.8         3.0         1.74         poor**         poor**           6.6         3.0         1.74         poor**         poor** <t< td=""><td>pi70</td><td>1.07</td><td>30</td><td>0.32</td><td><b>3</b></td><td>0.53</td><td></td><td>bood</td><td></td><td></td><td></td><td></td></t<>	pi70	1.07	30	0.32	<b>3</b>	0.53		bood				
6.5.2         2.0         1.50         3.0         2.71         poor**           5.46         2.0         1.71         50         2.73         poor**           6.6.32         2.0         1.74         50         2.78         poor**           11.19         2.0         1.74         poor**         poor**           11.19         2.0         2.24         5.9         poor**           5.88         2.0         1.20         5.9         poor**           6.00         0.04         50         0.03         poor**           1.07         30         0.04         50         0.03         poor**           5.84         2.0         0.04         50         poor**         poor**           6.0         2.2         3.0         1.74         poor**         poor**           6.5         3.0         1.74         poor**<		5.84	8	1.75	os:	2.92		Lood				
46.32         10.41         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.71         \$10         1.72         \$10         \$10         1.72         \$10	pi72	6.32	30	130	o 6	8.78 E. C		pool				
45.32         20         1.77         50         2.94         poor**           45.32         1.77         50         2.94         poor**           5.94         2.0         1.77         50         2.94         poor**           5.95         2.0         2.94         poor**         poor**           6.04         50         2.92         poor**           1.07         50         2.92         poor**           6.05         poor**         poor**           6.04         50         2.82         poor**           6.05         poor**         poor**           6.7         50         2.82         poor**           6.5         50         1.74         poor**           6.5         50         2.74         poor**           6.5         50         1.74         poor**           6.5         50         1.74         poor**           6.5         50         2.43         poor**           6.5         50         2.43         poor**           6.5         50         2.75         poor**           7.0         2.84         poor**           8.0         2.75 <td>DI/3</td> <td>20.00 20.00</td> <td>02</td> <td>0.17</td> <td>2</td> <td>4.74</td> <td></td> <td>, boot</td> <td></td> <td></td> <td></td> <td></td>	DI/3	20.00 20.00	02	0.17	2	4.74		, boot				
45.32         10.41         22.66         poor**           11.19         20         2.24         \$6         5.99         poor**           0.05         80         0.04         \$6         0.02         poor**           0.05         80         0.04         \$6         0.02         poor**           0.05         80         0.04         \$6         0.02         poor**           6.54         30         1.75         \$0         2.82         poor**           6.54         20         1.11         \$6         2.77         poor**           6.54         20         1.17         \$0         2.77         poor**           6.57         50         1.74         poor**         2         28         poor**           6.50         50         1.74         mature         good**         2         28         p           6.57         20         1.24         mature         good**         2         28         p         p           6.67         20         1.24         mature         good**         2         28         p         p           4.80         20         1.34         poor**         2 <td>pi/4 pi/5</td> <td>3.49 5.86</td> <td>70 Z</td> <td>1.17</td> <td>20 05</td> <td>2.93</td> <td></td> <td>poor*</td> <td></td> <td></td> <td></td> <td></td>	pi/4 pi/5	3.49 5.86	70 Z	1.17	20 05	2.93		poor*				
45.32         10.41         22.64         5.0         6.59         poor**           1.11.9         2.0         2.24         5.0         2.99         poor**           0.05         80         0.04         5.0         2.99         poor**           1.07         3.0         0.32         poor**         poor**           6.54         3.0         0.34         poor**         poor**           6.54         2.0         1.17         5.0         2.77         poor**           6.54         2.0         1.11         5.0         2.77         poor**           6.54         2.0         1.17         5.0         2.77         poor**           6.54         2.0         1.17         5.0         2.77         poor**           5.6         2.77         5.0         2.27         poor**         2.8         p           6.50         3.2         2.0         6.20         poor**         2.8         p         p           8.6         3.0         1.54         malute         poor**         2.8         p         p           8.6         3.0         1.54         poor**         p         p         p <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr<>												
11.19         20         224         56         589         poor**           5.98         20         1.20         50         2.99         poor**           1.07         30         0.04         50         0.29         poor**           1.07         30         0.72         50         0.53         poor**           5.64         30         1.75         50         2.92         poor**           5.64         20         1.77         50         2.77         poor**           5.64         20         1.77         50         1.74         poor**           5.66         20         1.77         50         1.74         poor**           5.66         20         1.74         poor**         poor**         poor**           5.66         1.46         50         2.44         poor**         2           6.67         20         1.46         50         2.44         poor**           4.30         20.60         50         2.44         poor**         poor**           4.30         20.60         50         2.44         poor**         poor**           4.30         20.60         50         6.82 <td>ubtotal</td> <td>45.32</td> <td></td> <td>10,41</td> <td></td> <td>22.66</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td>	ubtotal	45.32		10,41		22.66				-		
11.19         2.0         2.24         \$69         poor**           5.88         2.0         1.24         \$69         poor**           0.05         80         0.04         \$60         0.03         poor**           1.07         3.0         0.04         \$60         0.02         poor**           5.84         3.0         1.75         \$60         2.77         poor**           6.34         2.0         1.11         \$60         2.77         poor**           5.94         2.0         0.70         \$60         1.74         poor**           5.96         2.0         1.74         poor**         2.8         poor**           5.96         1.74         mature         good**         2.8         poor**           6.67         2.0         1.2.89         \$60         2.44         poor**         2.8         p           6.67         2.0         1.5.44         mature         good**         poor**         2.8         p         p           6.67         2.0         1.5.44         mature         poor**         poor**         2.8         p         p           4.30         2.0         1.34         p	aco Creek											
5.86         2.0         1.20         5.0         9.9         poor**           0.05         80         0.04         5.0         0.02         poor**           1.07         30         0.32         5.0         0.53         poor**           6.32         30         1.75         5.0         2.77         poor**           6.54         20         1.11         5.0         2.77         poor**           5.54         20         1.74         poor**         poor**           5.64         20         1.74         poor**         poor**           5.65         1.74         poor**         poor**         poor**           5.60         1.28         poor**         poor**           4.8 b         30         14.6 b         5.0         2.44           4.8 b         30         14.6 b         5.0         2.44           4.8 b         30         1.33         5.0         2.44           4.3 b         2.0 c         0.8 b         2.44         poor**           4.3 c         2.7 c         2.0 c         1.12.90         poor**	335	11,19	20	2.24	20	5.59		poor**				
0.05         60         0.04         50         0.02         poor**           1.07         3.0         0.32         50         0.53         poor**           5.84         3.0         1.75         50         2.92         poor**           6.32         3.0         1.75         50         2.77         poor**           6.34         2.0         1.11         50         2.77         poor**           5.6         2.0         1.74         poor**         poor**           5.6         1.73         50         1.288         poor**           6.5         1.1         mature         good**         2           8.6         1.2.88         poor**         poor**           4.8         50         15.44         poor**           4.8         50         2.4.43         poor**           4.30         2.0         6.6         5.0         2.15           4.30         2.0         6.86         5.0         2.15         poor**           4.30         2.73         5.0         6.82         poor**	939	5.98	20	1.20	20	2.99		boot.				
1.07         340         0.52         500         0.53         poor**           5.84         3.0         1.75         5.0         2.02         poor**           6.32         3.0         1.11         5.0         2.77         poor**           5.54         2.0         1.11         5.0         2.77         poor**           5.64         2.0         1.17         5.0         2.73         poor**           5.66         2.0         1.74         poor**         2.88         p         p           5.67         2.0         1.28         poor**         2.8         p         p           6.67         2.0         1.4.66         5.0         2.4.43         poor**         p         p           6.67         2.0         1.34         poor**         p         p         p           4.30         2.0         0.86         5.0         2.15         p         p           226.80         3.0         1.32.90         p         p         p         p           4.30         2.0         2.15         p         p         p         p           4.30         2.0         0.86         5.0 <td< td=""><td>5137</td><td>0.05</td><td>80</td><td>0.04</td><td>20</td><td>0.02</td><td></td><td>bood</td><td></td><td></td><td></td><td></td></td<>	5137	0.05	80	0.04	20	0.02		bood				
6.254         3.0         1.79         3.0         2.92         proof**           5.54         2.0         1.11         50         2.77         proof**           5.54         2.0         1.11         50         2.77         proof**           5.64         2.0         1.17         50         2.77         proof**           5.65         2.0         1.74         proof**         proof**           5.65         2.0         1.2.88         proof**         proof**           6.6.01         5         2.2	5170	1.07	S 6	0.32	9 1	50 G		bood				
5.54         20         1.11         50         2.77         poor**           3.49         20         0.70         50         1.74         poor**           5.86         20         1.17         50         1.74         poor**           5.86         20         1.77         50         1.288         poor**         2         28         p         p           25.76         30         7.73         50         12.88         poor**         2         28         p         p         p           4.88         30         14.66         50         2.443         poor**         poor**         poor**         poor**         poor**         poor**           4.30         20         6.67         poor**         poor**         poor**         poor**           226.80         50.60         132.90         poor**         good**         poor**	77.c	9,64 3,04	8 8	190	S	3.16		<b>1</b> .000				
3.49         20         0.70         50         1.74         poor**           5.86         20         1.17         50         2.93         poor**           5.50         1.73         50         1.28         poor**         2         28         p         p           6.501         5         1.28         poor**         2         28         p         p         p           8.0         1.26         50         15.44         poor**         poor**         p         p         p           4.8 B         30         14.66         50         2.4.43         poor**         p         p         p           6.67         2.0         1.33         50         2.15         p         p         p           226.80         50.66         50.66         50.60         6.82         g         g         g         p         p         p	573	55 C	20	, , , , , , , , , , , , , , , , , , , ,	20	2.77		*, tood				
5.86         20         1.17         50         2.93         poor**           25.76         30         7.73         50         12.88         poor**         2         28         p         p           6.5.01         12.86         50         15.44         poor**         2         28         p         p         p           4.8 6         30         14.66         50         24.43         poor**         poor**         poor**         poor**         poor**         poor**         poor**         p	Di74	3.49	20	0.70	50	1.74		poor				
25.76         3.0         7.73         50         12.88         poor**         2         28         poor**           65.01         4.6         50         24.43         mature         good**         2         28         p         p         p           48.86         3.0         14.66         50         24.43         poor**         poor**         poor**         poor**         poor**         poor**         poor**         p	pi75	5.86	20	1.17	20	2.93		poor				
66.01         5         3.25         20         52.01         mature         good         2         28         p         P           40         1.36         50         15.44         poor**         P	pi92	25.76	30	7.73	20	12.88		poor**				
30.89     40     12.36     50     15.44       48.86     30     14.66     50     24.43       6.67     20     1.33     50     3.34       4.30     20     0.86     50     2.15       226.80     50.60     132.90       13.64     20     2.73     50     6.82	tha 1	65.01	ĸ	3.25	8	52.01	тавие	pooti	2	58		2
48 86 30 14.66 50 24.43 667 20 1.33 50 3.34 4.30 20 0.86 50 2.15 226.80 50.60 132.90	pi93	30.89	40	12.36	g;	15.44		bood				
226.80 50.60 13.64 20 2.73 50 6.82	pi94	48.86	8 3	14.66	9 :	24.43		pood				
4.30     20     0.60     50.60     132.90       13.64     20     2.73     50     6.82	2610	6.67	2 6	1.33	3 5	4.00		DOC .				
226.80     50.60     132.90       13.64     20     2.73     50     6.82	/ald	05.4	07	0.65	ř	Ç. 73		5				
13.64 20 2.73 50 6.82	ibtotal	226.80	Andrew Market and Andrew Market and Andrew Andrew Market and Andrew Andr	50.60		132.90			****		WWW.deleccolors	10 mm 1 m
	Canyon pi91	13.64	20	2.73	ଜ	6.82		poof				
		***************************************								***************************************		

Purgatoire Table 3: Purgatoire River & Tributaries - Tamarisk Infestation Attribute Data

rence	er Cottonwood Willow Russian Olive present (np)						
Photo Reference	Number						
A Company of the Comp	Avg Height (m)						
	Access						
	Age Status						
Riparian	Acreage			422.77	200000000000000000000000000000000000000	:	4,811.31
4	Upland						
Canony Coverage	Acreage	and the second s		198.99			2,891.71
	Percent Cover						
	Acreage			763.21			10,013.66
	Reference Name		Purgatoire Related	Waterways Total		Purgatoire River	Totals

Where ground truthing was not available for estimation of Percent Upland, a conservative value of 50% upland area was assumed (indicated in bold).

\*\*Non ground-truthed

NOTE: Reference Name "pi...." refers to areas interpreted from high resolution aerial imagery. These areas were inaccessible due to either land ownership or topography issues.

Purgatoire Table 4 -- Purgatoire River & Tributaries - Tamarisk Infestation Inventory & Costs Data

Range Low	•	\$388,796	\$52,375	\$123,650	\$82,950	\$1,857	\$23,459	\$24	€33 851	94.60 440	Dr- '01-9	\$133,000 \$440,000	\$113,738	\$51,48U	\$100,764	\$178,438	\$168,622	\$158,020	\$292,492	\$109,967	\$222,788	\$127.558		\$2,504,636		TG0 5745	100,1420	\$408,154	\$147,395	\$209,693	\$211,270	\$71,811	\$113,295	\$137,319	\$91,344		\$1,637,618		066\$	966 63	\$2,000 \$7,083	302 303	020,020	#/O'C! \$	\$20,255	\$36,682	\$25,914	\$30,934	
Range High		\$500,631	\$67,440	\$159,218	\$100,731	\$2.255	\$28.488	00t,043	0000	9445,000	\$180,462	\$182,680	\$155,459	\$66,288	\$129,749	\$275,833	\$230,473	\$215,982	\$399,780	\$141,599	\$304,508	\$164.249	-	\$3,349,443			\$318,482	\$575,012	\$189,792	\$270,010	\$272,041	\$98,151	\$137,581	\$176.819	\$124 849		\$2,162,738		\$1.102	£44 436	φ - 1, 130 φ 443	7 - 7	/GZ/05\$	\$17,463	\$23,219	\$42,049	\$29,706	\$35,461	
Most Likely Total Cost		\$444,690	\$59,904	\$141,427	\$91.837	42 058	#E,000 €26 670	716,074	176	\$38,718	\$160,297	\$158,156	\$134,589	\$58,881	\$115,250	\$227,111	\$199,533	\$186,988	\$346,111	\$125.776	\$263,629	2446 806	20000	\$2,926,850		1	\$282,895	\$491,543	\$168,584	\$239,839	\$241,643	\$84,975	\$125,433	\$157.061	\$108 089	) ) )	\$1,900,062		\$1 046	940.50	910,000	050'/#	\$28,325	\$16,568	\$21,736	\$39,365	\$27,809	\$33,197	
Cost Formula*		œ.	: 00	ı m	1 0	ם מ	na c	m	œ	മ	æ	В	മ	83	Ω.	മ	æ	ا ۵۵	ıα	n a	ם ב	ם נ	n				æ	മ	Ф	മ	മ	α	α	n oo	0	ם			٥	<u>n</u> (	m (	n	æ	В	മാ	œ	83	83	
or < 50'	ne	> 50'	2 <u>0</u> 5	2 20	2 2	200	^	20.	> 20,	> 20.	× 50.	> 20,	> 50,	> 20,	> 50,	> 20.	, US <	, c	.05 ^	2 6	200	20 i	•				× 50'	> 50,	> 50,	> 50,	> 50,	. (25)	7 20	2 2	2 6			Po Dam		); (	, 20, ^	, 2 ^	> 50,	> 50,	> 50'	> 50,	20.	> 20,	
Access	hero County Lir	- Francis (1)	**pood	2000	noofi	9000	good	good**	**boog	poob	poob	**poop	dood**	dood**	**pood	bood	**1000	**0000	**0000	2006	poob	good	poof				dood	poob	poop	pood	poor	0000	0000	##p000	Bood.	poob		to Trinidad La		good	boog	poob	poofi	**poob	good**	**pood	annd	pood	-
Percent Cover	nance to Bent ( O		900	OS S	30	20	8	20	50	30	99	40	40	: E	: S	3 6	200	40	2 5	40	g;	40	30				30	45	30	30	30	8 6	<b>?</b> ?	0,40	3, 6	40 0		on Loundary I inc	التاج كرسين كالناق	o.	ស	ເດ	10	ú	10	€ €	2 (1	5 2	
Acreage	Propess Confi	Agiista Com	20.02	70.07	. 61.79L	162.00	3.63	45.81	0.05	45.77	189.50	140.97	119.97	69.61	135.25	436.44	477 96	17.00	100.07	308.51	148.69	234.99	172.48	3 022 00	3,044.30	tero County	334 44	390.50	199.30	283.54	285.67	75.74	70.74	07.1.77	165.66	96.35	2,072.47	11 00 85	reio / Las Ai	7.32	73.97	53.89	99.41	115.99	76.28	138 15	97.60	116.50	
Reference Name	Marinatory Brundstein. Arkanese Confluence to Bent ( Otero County Li	Mainstell rulyatone. A	rod)	PIIQ.	tpb2	pi45	pi46	pi47	0 <u>1</u> 48	foh3	toha	040	0.50	2.50	1 C C C C C C C C C C C C C C C C C C C	700	+00	eciq Ecid	4000 11:	cold	pi56	pi57	pi58		Sublotai	Mainstern Purgatoire: Otero County	tout	tho	1004	Poot Poot	+ coct	Soch Services	god)	/och	ASID	09id	Subtotal	as Control of the Anima County in to Trinidad ako Dam	Maiisteil ruigaloile.	ř <u>ď</u>	tp2	tp3	<b>D</b>	Cia	1 00	5 2	, t	9d	•

Purgatoire Table 4 -- Purgatoire River & Tributaries - Tamarisk Infestation Inventory & Costs Data Width >

Range Low	\$81 183	\$53.034	\$24 694	\$30,225	\$13,558	\$7,226	\$67,856	\$192,740	\$51,401	\$1,443	\$43,448	\$132,861	\$55,294	\$61,589	\$40,492	437,185	\$71,169	\$64,379	\$24,759	\$19,506	\$11,136	\$21,879	\$8,830	\$33,180	\$11,013	\$36,784	\$9,823	\$17,263	\$49,396	\$33,775	\$26,299	\$23,155	\$9,989	\$28,420	\$25,936	\$55,239	\$65,179	\$27,400	\$41,313	\$39,381	\$22,690	\$87,845	\$133,617	\$63,762	\$72,202	\$59,147	\$292,677	1011219
Range High	\$125 495	98C 888	\$28.307	\$41,312	\$15,995	\$10,784	\$84,841	\$263,438	\$66,187	\$1,858	\$48,491	\$148,282	\$61,711	\$68,737	\$44,048	\$39,446	\$79,430	\$71,851	\$29,134	\$21,770	\$12,429	\$24,418	\$9,855	\$39,043	\$12,292	\$41,053	\$11,559	\$20,313	\$58,124	\$39,743	\$30,946	\$29,815	\$11,148	\$33,442	\$30,519	\$91,010	\$97,269	\$34,073	\$46,108	\$46,340	\$25,323	\$103,368	\$157,228	\$75,029	\$84,960	\$66,012	\$344,395 8172,004	F00'0'-10
Most Likely Total Cost	6103 338	\$50,000	\$26,500	\$35,766	\$14.776	\$9,016	\$76,345	\$228,073	\$58,791	\$1,650	\$46,113	\$141,011	\$58,685	\$65,367	\$42,409	\$38,448	\$75,535	\$68,328	\$27,022	\$20,702	\$11,819	\$23,221	\$9,372	\$36,212	\$11,689	\$39,040	\$10,721	\$18,840	\$53,910	\$36,861	\$28,702	\$26,484	\$10,602	\$31,017	\$28,306	\$73,115	\$81,330	\$30,811	\$43,847	\$42,980	\$24,081	\$95,873	\$145,828	\$69,589	\$78,800	\$62,775	\$319,424 6.160 644	t-100,001 s
Cost Formula*		<b>G</b> α	<b>ω</b> α	2 00	: 00	٥	മ	മ	<b>m</b> .	В	۵	۵	۵	Δ :	ΩΙ	۵	۵	۵	۵	۵	Ω	Q	۵	۵	۵	۵	Ω	۵	Q	О	۵	aa i	. 0	Δ.	Ω	m	۵	۵	Ο:	ا ۵	Ω;	۵	Ω.	۵	۵۱	<b>D</b> (	<b>a</b> c	Ž
Width >	č	) ( v	000	 20 20 4	> 20,	× 20,	> 20,	> 50,	> 20,	> 20,	> 20,	> 50,	> 20,	> 20,	^ 20	> 20	× 50 <b>,</b>	> 50,	> 50'	> 50,	> 50'	> 50,	> 20,	> 50,	> 50'	> 50,	, 20, ×	v 50'	> 20,	> 20.	> 20,	> 20,	, 20 <u>.</u>	> 50,	> 50,	> 20,	> 50,	> 20	> 20,	× 50,	,0 č	> 20,	× 50'	> 20,	× 20.	20,	, v	3
Access	: *** 	9000	**0000	DOOD TO	pool	poor	poob	pood	good	good**	poor**	poor**	poor**	poor	poor	poor**	poor	poor	poor**	poor**	poor**	poor**	poor**	poor**	poor**	poor**	poor**	poor**	poor**	poor**	poor**	pood	poor**	poor	poor	poof	poor	poor**	poor**	poor	poor	poor	poor**	poor**	poor	poor	poor	500
Percent Cover	Ş	2 8	9 <del>5</del>	2 ₽	<u> </u>	. 02	25	40	30	30	70	20	20	20	<del>.</del> 55	10	20	20	30	20	20	20	20	30	20	20	30	30	30	30	30	30	50	30	30	70	70	40	20	GS ;	Q7 52	Q.	30	30	30	50	900	3
Acreage	000	62.06 74.74	00 00	3.1 A8	34 66	3.97	108.02	203.30	69.50	1.95	64.16	196.20	81.65	90.92	77.92	104.96	105.10	95.07	25.56	28.80	16.45	32.31	13.04	34.25	16.26	54.32	10.14	17.82	50.99	34.86	27.15	31.31	14.75	29.34	26.77	37.84	35.79	22.30	61.01	40.65	33.51	90.68	137.93	65.82	74.53	87.34	302.12	20.20
Reference Name		tp/		0 g	54	0101	tp11	tp12	tp13	pi10	pi11	pi12	pi13	pi14	pi15	pi16	pi17	pi18	pi28	pi29	pi30	pi31	pi32	pi33	pi34	pi39	pi40	pi41	pi42	pi43	pi44	tp2-1	pi67	pi68	pi69	tp15	tp16	pi <b>76</b>	77iq	pi78	6/ld	pi81	pi82	pi83	pi84	pi85	173-1 186	Oord.

Purgatoire Table 4 -- Purgatoire River & Tributaries - Tamarisk Infestation Inventory & Costs Data

Forcest Controlled   Controll	;	,		•	Width >	***************************************	Most Liboly Total Cost	Rance High	Range Low
9.2         9.0 <th>ence Name</th> <th>Acreage</th> <th>Percent Cover</th> <th>Access</th> <th>or &lt; 50</th> <th>COST FORMULA</th> <th>MOST LINEIY I OIGH COST</th> <th></th> <th></th>	ence Name	Acreage	Percent Cover	Access	or < 50	COST FORMULA	MOST LINEIY I OIGH COST		
1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	7812	83 53	30	20001***	v 50.	Ω	\$88,298	\$95,200	\$80,904
99         30         Diomination         50         90         520         197         8         520 </td <td>John John John John John John John John</td> <td>98.24</td> <td>3 8</td> <td>1000 1</td> <td>× 50.</td> <td>a ۵</td> <td>\$70,583</td> <td>\$74,223</td> <td>\$66,504</td>	John John John John John John John John	98.24	3 8	1000 1	× 50.	a ۵	\$70,583	\$74,223	\$66,504
7.0   20   100	08jc	22.52 22.98	) (F	***	> 50,	۵	\$24,298	\$26,197	\$22,263
\$5,040,233 \$5,040,233 \$5,040,778 \$2,040,040,040,040,040,040,040,040,040,04	tp14	69.70	50	pood	× 50.	m	\$39,511	\$43,338	\$35,688
10.45   10.04   10.0	Solve Care	4 4 5 5 00					\$3.213.320	\$3.505,778	\$2,907,953
0.45         \$5,040,233         \$5,017,959         \$7,058           0.0         5.0         900d         > 50         B         \$1,286         \$1,386           0.1         100         900d         > 50         B         \$1,224         \$1,694           1.1         100         900d         > 50         B         \$1,224         \$1,86           2.1         5.0         900d         > 50         B         \$1,60         \$1,86           2.4         5.0         900d         > 50         B         \$1,049         \$1,86           2.4         5.0         900d         > 50         B         \$1,049         \$1,166           3.4         5.0         900d         > 50         B         \$1,049         \$1,166           3.4         5.0         900d         > 50         B         \$1,049         \$1,166           3.5         5.0         900d         > 50         B         \$1,049         \$1,166         \$1,166           3.6         5.0         900d         > 50         B         \$1,049         \$1,166         \$1,166           3.6         5.0         900d         > 50         B         \$2,176         \$1,176 <td>Subrotai</td> <td>4,133.00</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Subrotai	4,133.00							
100   5   5   9   9   9   1   1   1   1   1   1   1	em Purgatoire Totals	9.250.45					\$8,040,233	\$9,017,959	\$7,050,208
10   10   10   10   10   10   10   10		20000	WARRIED TO THE PARTY OF THE PAR			**************************************			
9.09         5         9.00         > 50         B         \$1.288         \$1.388           0.02         100         good         > 50         B         \$51         \$53         \$58           0.01         100         good         > 50         B         \$51         \$2         \$50         \$58           9.27         5         good         > 50         B         \$1.534         \$1.896 </td <td>re Related Wate</td> <td>ırways</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	re Related Wate	ırways							
9189         51,289         \$1,368           0.02         100         good***         >507         B         \$50         \$667           0.01         100         good***         >507         B         \$51,324         \$1,368           9.27         5         good***         >507         B         \$1,324         \$1,366           9.27         50         good***         >507         B         \$1,422         \$1,504           11.34         50         good***         >507         B         \$1,422         \$1,606           11.34         50         good***         >507         B         \$1,409         \$1,606           11.34         50         good***         >507         B         \$1,049         \$1,166           2.11         30         good***         >507         B         \$1,049         \$1,166           2.21         30         good***         >507         B         \$2,541         \$2,541           1.1.34         30         good***         >507         B         \$2,569         \$2,689           2.4.14         30         good***         >50         B         \$2,1786         \$2,186           2.4.1	ton Creek							-	
0.02         10.0         good         > 50°         B         \$50         \$67           0.02         10.0         good         > 50°         B         \$50         \$60           0.01         10.0         good         > 50°         B         \$1,284         \$1,396           2.24         30         good         > 50°         A         A         \$1,534         \$1,396           2.24         30         good         > 50°         B         \$1,394         \$1,396           2.24         30         good         > 50°         B         \$1,284         \$1,396           1.194         50         good         > 50°         B         \$1,284         \$1,396           1.85         50         good         > 50°         B         \$1,186         \$1,186           6.63         5         good         > 50°         B         \$1,186         \$2.501           8.63         5         good         > 50°         B         \$2.268         \$2.268           2.41         5         good         > 50°         B         \$2.268         \$2.268           8.41         5         good         > 50°         B         \$2.2	trc1	60.6	ς.	poob	> 20,	<u>α</u>	\$1,298	\$1,368	\$1,228
0.02         100         good         > 50         B         \$51         \$66           9.13         9.00         > 50         B         \$1,324         \$1,396         \$1,396           9.27         5         good         > 50         B         \$1,896         \$1,816         \$1,816           11.34         5         good         > 50         B         \$1,049         \$1,166         \$7.06           11.54         5         good         > 50         B         \$1,049         \$1,166         \$7.06           12.4         30         good         > 50         B         \$1,049         \$1,166         \$2,011           12.5         10         good         > 50         B         \$2,476         \$2,406         \$3,809         \$3	tre2	0.02	100	poob	> 50,	മ	820	29\$	\$33
917         100         Good         > 50         B         \$22         \$30           913         \$1,09         Good         > 50         B         \$1,324         \$1,396           2.24         30         good         > 50         A         A         \$1,324         \$1,396           2.24         30         good         > 50         A         A         \$1,324         \$1,396           14.54         50         good         > 50         B         \$1,224         \$1,396           14.52         2.24         \$6         B         \$1,284         \$1,496         \$1,406           14.52         2.24         \$6         B         \$1,786         \$1,186         \$1,186           1.6.2         2.1         30         good         > 50         B         \$2,014         \$1,186         \$2,014           1.2.3         1.0         good         > 50         B         \$3,186         \$2,014         \$2,014           2.4.4         30         good         > 50         B         \$2,786         \$3,216         \$2,014           2.4.4         30         good         > 50         B         \$2,786         \$3,206         \$3,216	25. 26ia	0.02	100	good**	> 20,	æ	\$51	\$68	\$34
9.13         \$1,534         \$1,534         \$1,534           2.24         30         good         > 60         B         \$1,524         \$1,366           2.24         30         good         > 60         B         \$1,661         \$1,666           11,34         11,34         \$1,667         B         \$1,666         \$1,766         \$1,666           11,34         \$1,662         \$2         \$2         \$2         \$2         \$1,766         \$2,611           11,34         \$1,662         \$2 <td>to1</td> <td>0.01</td> <td>100</td> <td>poob</td> <td>&gt; 50,</td> <td>ш</td> <td>\$22</td> <td>\$30</td> <td>\$15</td>	to1	0.01	100	poob	> 50,	ш	\$22	\$30	\$15
927         5         good         > 50         B         \$1,324         \$1,396           224         30         good***         < 50	Subtotal	9.13					\$1,422	\$1,534	\$1,310
9.27         5         good         > 50°         B         \$1,324         \$1,386           0.43         50         good***         < 50°	veli Arroyo								
2.24         30         good***         < 60**         A         \$1.691         \$1.816           1.43         50         good***         > 50**         B         \$5.561         \$7.06           1.85         20         good***         > 50**         B         \$1.049         \$1.1515           2.11         30         good***         > 50**         B         \$2.011           2.4.72         70         good***         > 50**         B         \$5.587         \$5.898           3.41         30         good***         > 50**         B         \$2.776         \$5.898           1.46         50         good***         > 50**         B         \$2.776         \$5.887           3.41         30         good***         > 50**         B         \$2.776         \$5.887           1.46         50         good***         > 50**         B         \$2.776         \$5.892           1.40         50         good***         > 50**         B         \$5.074         \$5.992           1.40         40         good***         > 50**         B         \$5.024         \$5.992           1.40         40         good***         > 50**         B	tpa1	9.27	5	poof	> 20,	മ	\$1,324	\$1,396	\$1,253
11.94   50   900d   > 50   B   \$1.516	pi38	2.24	30	**poob	< 50,	∢	\$1,591	\$1,816	\$1,366
11.94         \$3.5f1         \$3.918           18.52         20         good         > 50'         B         \$10,499         \$11,515           2.11         30         good**         > 50'         B         \$3,786         \$2,011           2.11         30         good         > 50'         B         \$3,786         \$5,896           39.12         5         good         > 50'         B         \$5,897         \$5,896           24.72         70         good**         > 50'         B         \$5,897         \$5,896           34.14         30         good**         > 50'         B         \$2,766         \$1,26           1.98         50         good**         > 50'         B         \$2,766         \$1,226           0.44         80         good**         > 50'         B         \$2,766         \$1,226           140.17         \$0         good**         > 50'         B         \$1,786         \$2,011           140.17         \$0         good**         > 50'         B         \$1,786         \$2,011           140.17         \$0         good**         > 50'         B         \$3,024           140.17         \$0 </td <td>tpa2</td> <td>0.43</td> <td>20</td> <td>pood</td> <td>&gt; 50'</td> <td>හ</td> <td>\$596</td> <td>\$706</td> <td>\$486</td>	tpa2	0.43	20	pood	> 50'	හ	\$596	\$706	\$486
18.52 20 good		44.04					52 544	53 918	\$3.105
18.52         20         good***         > 50**         B         \$10,499         \$11,515           2.11         30         good***         > 50**         B         \$3,689         \$3,813           1.2.53         10         good***         > 50**         B         \$3,689         \$3,818           6.63         5         good         > 50**         B         \$5,687         \$5,898           34.14         30         good***         > 50**         B         \$2,786         \$5,948           1.98         50         good***         > 50**         B         \$2,756         \$3,265           34.14         30         good***         > 50**         B         \$2,756         \$1,226           1.98         50         good***         > 50**         B         \$2,756         \$1,226           1.44         80         good***         > 50**         B         \$1,786         \$2,011           1.67         40         good***         > 50**         B         \$1,786         \$2,011           1.66         40         good***         > 50**         B         \$6,43         \$3,924           1.61         30         good***         > 50**<	untotal	11.94					110,00		
18.52         20         good         > 50°         B         \$10,499         \$11,515           2.11         30         good***         > 50°         B         \$3,696         \$2,011           1.25         10         good***         > 50°         B         \$3,687         \$5,689           5.4.72         70         good***         > 50°         B         \$5,587         \$5,689           3.4.14         30         good***         > 50°         B         \$2,756         \$32,508           1.94         80         good***         > 50°         B         \$2,756         \$1,226           1.40.17         \$0         good***         > 50°         B         \$1,226         \$1,226           2.11         30         good***         > 50°         B         \$1,226         \$1,226           1.40.17         \$0         good***         > 50°         B         \$1,786         \$1,20,672           2.11         30         good***         > 50°         B         \$1,786         \$1,786           2.66         B         \$0         B         \$2,749         \$3,924           4.86         50         good***         > 50°         B	osa Arroyo							:	:
2.11         30         good***         > 50**         B         \$1,766         \$2,011           6.63         5         good         > 50**         B         \$946         \$6,898           6.63         5         good         > 50**         B         \$5,587         \$5,898           24.72         70         good         > 50**         B         \$28,876         \$5,894           1.98         50         good**         > 50**         B         \$2,876         \$3,265           1.98         50         good**         > 50**         B         \$2,176         \$1,226           1.40.17         \$1         30         good**         > 50**         B         \$1,226         \$1,226           2.11         30         good**         > 50**         B         \$1,02,74         \$10,67           1.40.17         \$1         \$0         \$0         B         \$1,226         \$1,226           2.11         30         good**         > 50**         B         \$1,20,672         \$1,20,672           2.11         30         good**         > 50**         B         \$2,43         \$2,433         \$2,674           4.86         50         goo	toc1	18.52	20	good	> 50,	යා	\$10,499	\$11,515	\$9,483
12.53   10   good   > 50'   B   \$5.569   \$3.813     12.53   10   good   > 50'   B   \$5.569   \$3.813     24.72   70   good   > 50'   B   \$5.587   \$5.889     24.72   70   good   > 50'   B   \$5.587   \$5.889     24.74   30   good   > 50'   B   \$5.28.76   \$5.365     1.98   50   good   > 50'   B   \$5.28.76   \$5.325     140.17   \$10   good   > 50'   B   \$5.76   \$5.28     2.11   30   good   > 50'   B   \$5.78   \$5.924     2.11   30   good   > 50'   B   \$5.796   \$5.924     4.86   50   good   > 50'   B   \$5.749   \$5.924     4.86   50   good   > 50'   B   \$5.743   \$5.723     4.77   30   good   > 50'   B   \$5.723   \$5.723     4.87   30   good   > 50'   B   \$5.723   \$5.7243     4.87   30   good   > 50'   B   \$5.7243     5.85   50'   50	pi104	2.11	30	**boog	> 50,	යා	\$1,786	\$2,011	\$1,561
6 653         5         good         > 50°         B         \$5496         \$9496         \$9496         \$9496         \$95889         \$9496         \$95889         \$9496         \$95889         \$9496         \$95889         \$9496         \$95889         \$9496         \$95889         \$9496         \$95889         \$9496         \$95889         \$9496         \$958948         \$95865         \$95865         \$9566         \$9566         \$9566         \$9566         \$1,226	tcc2	12.53	10	poob	> 50,	<b>c</b> a :	\$3,569	\$3,813 \$000	\$3,32b
39.12         5         good         > 50'         B         \$5.587         \$5.889           24.72         70         good***         > 50'         B         \$47,759         \$5.989           34.14         30         good***         > 50'         B         \$2.756         \$3.265           0.44         80         good***         > 50'         B         \$1.26         \$1.26           140.17         \$6         40         good***         > 50'         B         \$1.786         \$2.011           0.67         40         good**         > 50'         B         \$1.786         \$3.924           7.66         40         good**         > 50'         B         \$8.592         \$8.924           4.86         50         B         \$6.776         \$8.924         \$8.924           4.70         90         900***         > 50'         B         \$6.776         \$8.028           7.61         30         900***         > 50'         B         \$5.743         \$5.243           4.77         30         900***         > 50'         B         \$5.776         \$5.04           4.77         30         900***         > 50'         B	fcc3	6.63	ಭ	poob	> 90,	œ	\$946	866\$	C60
24.72         70         good***         > 50°         B         \$41,79         \$33,448         \$33,448         \$33,508         \$33,508         \$33,265         \$33,265         \$31,226         \$33,265         \$31,226         \$1,226 </td <td>tcc4</td> <td>39.12</td> <td>52</td> <td>poof</td> <td>&gt; 50.</td> <td>œ i</td> <td>782,587</td> <td>92,839</td> <td>\$5,286 600,000</td>	tcc4	39.12	52	poof	> 50.	œ i	782,587	92,839	\$5,286 600,000
34.14     30     good**     > 50'     B     \$2,756     \$3,205       1.98     50     good**     > 50'     B     \$2,756     \$3,265       1.98     50     good**     > 50'     B     \$120,672       140.17     \$10.77     \$102,740     \$120,672       2.11     30     good**     > 50'     B     \$2,011       2.11     30     good**     > 50'     B     \$8,6776     \$8,924       4.86     50     good**     > 50'     B     \$6,776     \$8,028       7.61     30     good**     > 50'     B     \$6,776     \$8,028       7.61     30     good**     > 50'     B     \$6,776     \$8,028       7.61     30     good**     > 50'     B     \$5,43     \$7,243       7.61     30     good**     > 50'     B     \$5,43     \$7,243       7.61     30     good**     > 50'     B     \$5,43     \$5,243       7.71     30     good**     > 50'     B     \$5,43     \$5,243       8     50     8     \$6,476     \$5,43     \$5,243       8     8     \$6,476     \$6,776     \$6,776     \$6,776     \$6,776 <t< td=""><td>toc5</td><td>24.72</td><td>20</td><td>good</td><td>&gt; 20.</td><td><b>co</b> :</td><td>\$47,759</td><td>\$59,448</td><td>\$30,082</td></t<>	toc5	24.72	20	good	> 20.	<b>co</b> :	\$47,759	\$59,448	\$30,082
1.98 50 good** > 50' B \$5.756 \$5.265 \$1.226	pi105	34.14	30	**poog	> 20,	m	\$28,876	\$32,508	\$25,24e
140.17   \$0 good**	pi106	1.98	50	good**	× 20.	മ	\$2,756	\$3,265	\$2,248
140.17     \$102,740     \$120,672       2.11     30     good**     > 50"     B     \$1,786     \$2,011       0.67     40     good**     > 50"     B     \$8,592     \$9,924       7.66     40     good**     > 50"     B     \$6,776     \$8,028       7.61     30     good**     > 50"     B     \$6,433     \$7,243       4.75     30     good**     > 50"     B     \$6,433     \$7,243       4.77     30     good**     > 50"     B     \$6,433     \$7,243       4.77     30     good**     > 50"     B     \$53,442     \$38,55	pi107	0.44	80	dood**	> 20,	മ	\$965	\$1,226	269\$
2.11 30 good** > 50' B \$1,786 \$2,011  0.67 40 good** > 50' B \$85  7.66 40 good* > 50' B \$85,92  4.86 50 good** > 50' B \$86,776  58,592  \$8,028  \$7,43  \$7,43  \$7,44  \$3,000** > 50' B \$8,422  \$8,176  \$8,028  \$7,74  \$3,000** > 50' B \$8,423	Subtotal	140.17			Ameloniaria		\$102,740	\$120,672	\$84,825
2.11 34 9000 > 50 B \$1,100 \$2,111    0.67 40 900d** > 50 B \$8,692 \$9,24    7.66 40 900d** > 50 B \$8,092 \$8,924    7.61 30 900d** > 50 B \$6,476 \$8,028    7.61 30 900d** > 50 B \$8,442 \$8,442 \$3,875    7.61 30 900d** > 50 B \$6,433 \$7,442 \$3,875    7.61 30 900d** > 50 B \$1,100	jole Creek		Ç	***	č	c	000	6	033.49
7.07 40 good > 50' B \$8,592 \$9,924 7.66 40 good* > 50' B \$6,776 \$8,028 7.61 30 good* > 50' B \$6,474 \$7,744 7.61 30 good* > 50' B \$6,433 \$7,543	DISG	2.11	S &	good	200	20 E	001,14	- 10,7% - 5867	200,1 <b>4</b>
7.00 40 900d 7.00 B 50.702 \$6.776 \$8,028 77.61 30 900d** > 50' B 56,43 \$7,248 77.61 30 900d** > 50' B 56,43 \$7,248 77.61 \$8.402 \$3.875	pi i uu #-4	70.0	5 ¢	poof	2 2	0 0	64 /# CO9 83	C000	500,000
4.00 50 good*	uc1	00.7 98.4	Đ 0	000g	ر م م	ם מ	26,00 46,776	426,554 48,028	* 2.20 ·
4 07 30 goods > 50 goods = 50.555	רטרוק	4.86	200	good	2007	ם מ	40,110 46,422	\$0,020 \$7,043	40,020 65 605
	pi luz	1.0.1	Og 6	good.	) ( )	ם ם	\$2,423 \$2,442	547' 14 878 878	\$3,040 \$3,040

Purgatoire Table 4 -- Purgatoire River & Tributaries - Tamarisk Infestation Inventory & Costs Data Width >

Reference Name	Acreage	Percent Cover	Access	Width > or < 50'	Cost Formula*	Most Likely Total Cost	Range High	Range Low
							4	6
tfc1	7.44	40	poof	> 20,	œ	\$8,348	\$9,642	4CU,14
# # C 2	0.32	40	pood	> 50,	Ω	\$10,457	\$12,079	\$8,837
iloz	20.0	> C	7	, ED.	. Ω	43 180	\$3 778	\$2,601
IIC3	67-7	S	200	3 1	٠ د	92.96	0.7.0	P093
ffc4	5.26	'n	goog	ેટ ∨	∢	0.00	00.0	+ 10 cc
ffc4	0.85	ស	poog	< 50,	∢	\$110	\$123	66
								000 014
Subtotal	52.13					699'09\$	\$58,326	\$42,800
Jour O conjugace 3 and								
Sall rightisto Creek	ć	C U	4	7	۵	\$4 975	\$5.645	\$4.285
(1512)	2.34	00	Jood.	200	2 (	0983	9000	\$748
pi20	0.51	20	poor	. 20. • 20.	، د	800 <del>0</del>	0000	61 000
pi21	1.37	20	poor	× 50.	ב ב	\$2,311	779'74	066.14
pi22	2.29	50	poor**	<b>^</b> 20,	Ω	\$3,870	\$4,391	\$3,333
pi23	1.02	20	poor**	> 20,	Ω	\$1,731	\$1,964	\$1,490
tsf1	0.63	30	poob	> 50,	œ	\$531	\$598	\$465
					***************************************	366 1 24	366.344	070 073
Subtotal	8.75					\$14,280	410,200	016,214
San Isidro Creek						••		
Was to see the see that the see	10.40	Cu	7	, ()	a	000 838	£45 123	\$31,064
1513	15:17	00.5	poop	2 6	ם מ	00000	47.50	45 150
ts:1	4.56	06	good	200	נומ	000,000	000,100	\$3,130 \$40.467
tsi2	39.42	10	poob	.00.	n	262,114	988,11\$	\$10,40/
pi24	28.04	20	good**	> 50,	ස	\$15,898	\$17,437	\$14,359
pi25	5.59	30	**boog	> 20,	<u>а</u>	\$4,728	\$5,323	\$4,134
tsi3	7.37	30	good	> 50,	æ	\$6,235	\$7,019	\$5,451
48.4	23.45	30	good	> 50,	ස	\$19,839	\$22,335	\$17,346
pi27	8.60	20	**poob	× 50'	Ф	\$4,875	\$5,347	\$4,403
tp14	37.32	20	poo6	> 50,	8	\$21,156	\$23,205	\$19,109
Subtotal	181.66					\$128,416	\$145,325	\$111,522
Trinchera Creek								
pi35	11.19	20	t-pood	> 20,	മ	\$6,342	\$6,956	\$5,729
pi36	5.98	20	good**	> 50,	В	\$3,390	. \$3,718	\$3,062
pi37	0.05	80	**poo6	> 50,	മ	\$101	\$129	\$74
Subtotal	17.21					\$9,834	\$10,804	\$8,864
								-
Luning Arroyo						3	!	
pi61	2.97	20	poor**	× 50,	Q	\$2,137	\$2,247	\$2,013
pi62	11.77	40	poor	> 50,	۵	\$16,267	\$17,989	\$14,466
pi63	4.51	20	poor**	> 20,	۵	\$3,240	\$3,407	\$3,053
pi64	9.63	20	poor**	> 50'	۵	\$6,924	\$7,281	\$6,524
0.65	16.82	02	Door**	. > 50,	۵	\$38,215	\$45,705	\$30,626
pi66	10.74	20 9	poor**	× 50.	۵	\$18,174	\$20,622	\$15,652
•								
Subtotal	56.44					\$84,958	\$97,251	\$72,334

Purgatoire Table 4 -- Purgatoire River & Tributaries - Tamarisk Infestation Inventory & Costs Data

				Name of the last		•		-
Reference Name	Acreage	Percent Cover	Access	or < 50'	Cost Formula*	Most Likely Total Cost	Range High	Kange Low
Van Bremer Arrovo							1	6
10 H	44.40	70	000r**	> 20,	۵	\$8,041	\$8,455	9/5/18
COID	2.0	2 0	***		· C	\$4.298	\$4,520	\$4,050
pi36	5.98	2.0	500	2	<b>)</b>	7.776	4144	06%
pi37	0.05	80	poor	} 	<b>a</b>	~		000 16
0.7io	107	30	***DOOD	× 20.	۵	\$1,128	917,15	550,14
T. C.	- u	200	*****	, RD	_	\$6.170	\$6,652	\$5,653
p:/.1	9.04	os T	iond.	00 1	ם מ	46.681	\$7.204	\$6.122
pi72	6.32	30	poor	∧	٠ ۵	0000	. 6 . 0	43 750
ni73	5.54	20	poor**	^ 20.	۵	088.54	64, 100	001.00
25.00	3.40	: 8	, ,	v 50°	0	\$2,506	\$2,635	\$2,361
pi75	5.86	20	poor	> 50,	۵	\$4,211	\$4,428	\$3,968
The state of the s	-				***************************************	\$37.131	\$39.439	\$34,602
Subtotal	45.32							
Chacuaco Creek								i i i i i i i i i i i i i i i i i i i
ni35	13.19	22	noor**	> 20,	۵	\$8,041	\$8,455	\$7,576
0 00	000	9 6	*****	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	_	\$4,298	\$4,520	\$4,050
ocid Ec.	0.0 0.0	0 0	*****	. /	) C	\$117	\$144	06\$
pi3/	cn:n	00	500	3 6	ל נ	£ 128	\$1.216	\$1.033
pi70	1.07	30	poor	OC <	וב	071.15	0-14-9e	4 6 F 8 F 3
pi71	5.84	30	poor**	> 20	Ω	90,170	700'00	200,00
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	00.0							

\*Cost Formula Descriptions\*

Cost Formula (Most Likely) Cost Formula (High range) Cost Formula (Low Range)

Purgatoire Table 4 -- Purgatoire River & Tributaries - Tamarisk Infestation Inventory & Costs Data

Width > Width > Width > Oost Formula\* Most Likely Total Cost Range High

Reference Name	Acreage	Percent Cover	Access	or < 50'	Cost Formula*	Most Likely Total Cost	Range High	Range Low
			A = Narrow Infestations (< 50') with good access B = Broad Infestations (> 50') with good access C = Narrow Infestations (< 50') with poor access D = Broad Infestations (> 50') with poor access	infestations (< 50°) with good access festations (< 50°) with good access infestations (< 50°) with poor access festations (< 50°) with poor access	ood access od access oor access or access	y = -0.0826x <sup>2</sup> + 26.121X y = -0.0149x <sup>2</sup> + 28.643X y = -0.1379x <sup>2</sup> + 33.961X y = -0.0694x <sup>2</sup> + 37.324X	$y = -0.0736X^2 + 29.191X$ $y = 0.0653X^2 + 29.784X$ $y = -0.1128X^2 + 35.115X$ $y = 0.0208X^2 + 37.373X$	$y = -0.0916X^2 + 23.051X$ $y = -0.095X^2 + 27.502X$ $y = -0.1584X^2 + 32.449X$ $y = -0.1568X^2 + 36.995X$
							y = Cost (\$/acre) X = Percent Cover	

<sup>\*</sup> Costs are based on detailed cost information found in Options for Non-Native Phreatophyte Control, March 2006, Tamarisk Coalition

<sup>\*\*</sup>Non ground-truthed

### Colorado Tamarisk Mapping & Inventory Project Objectives, Protocols, and Guidelines

Purpose: The purpose of this study was to establish and implement an inventory protocol that provides a clear understanding of the extent of the tamarisk problem but is also economical to perform. Quantifying and characterizing the tamarisk infestations on each major river system provides a wealth of information for many diverse users. The data produced provides planning level information that can support policy; and state, federal, and local decision-making concerning tamarisk control and riparian restoration efforts. Land managers, however, must take into consideration the site specific conditions of each land parcel and the desires/preferences of the landowner to select the appropriate tamarisk control and revegetation approach to implement.

Goal: The goal of these mapping and inventory protocols was to identify 85 to 90 percent of the tamarisk infestations in Colorado. This goal is achieved through the efficient inventory approach described below. The remaining 10 to 15 percent of infestations are scattered among minor tributaries and headwaters which can cost more to find than to control. These small scattered infestations are best identified as a component of larger-scale control projects.

Inventory Approach: To provide a thorough understanding of tamarisk infestations, a comprehensive data set was collected. This data provides essential information for developing effective cost estimates for control and revegetation, and to better understand impacts such as water losses and wildlife habitat effects. Tamarisk infestations were mapped by the Tamarisk Coalition on the Arkansas, Colorado, Purgatoire, White, Gunnison, Uncompahgre, Dolores, San Juan, Republican, and South Platte watersheds including major tributaries of each. The Yampa River watershed was mapped under an agreement with the National Park Service at Dinosaur National Monument. The North Platte and Rio Grande watersheds have minimum infestations that were assessed based on local weed managers' input but were not directly surveyed. The mapping and inventory process had five basic components.

- 1) High resolution aerial and satellite photos that are ortho-rectified (usually at 2 meter resolution or better) were acquired from available sources at no cost. These include photography from Mesa County GIS, U.S. Department of Agriculture Farm Service Agency, and TerraServer. Utilization of National Agricultural Imagery Program (NAIP-2005) aerial photographs were, in most cases, the most current, consistent source of imagery for mapping purposes (available at <a href="http://datagateway.nrcs.usda.gov/NextPage.asp">http://datagateway.nrcs.usda.gov/NextPage.asp</a>).
- 2) A basic understanding of infestation locations was gleaned from county weed managers, the state weed coordinator, state agriculture specialists, the water conservancy district staff, federal weed managers, university researchers, private land owners, and/or others. Photo interpretation of high-resolution aerial photography proved to be valuable in determining the potential infestation extent where prior knowledge was not available.

- A consultation with the US Geological Survey (USGS) and National Institute of Invasive Species Science was performed for technical assistance and data standardization to ensure database compatibility with the national database system ( www.niss.org)
- 4) On-the-ground surveys were then performed by a two-person crew to verify the following attributes of the tamarisk infestation:
  - ✓ GPS coordinates of tamarisk stand (Universal Transverse Mercator-UTM)
  - ✓ Percent cover (canopy)
  - ✓ Average height (added at the request of USGS partway through the field work on the Arkansas River)
  - ✓ Percent riparian area: defined as the portion of area currently occupied by tamarisk found in the floodplain corridor where native phreatophytes such as cottonwoods and willows could exist in the future.
  - ✓ Percent upland area: defined as the remaining land within the floodplain where dryland plant species would be more prevalent after tamarisk control is achieved is classified as upland.
  - ✓ Maturity (mature or immature)
  - ✓ Accessibility (good or poor for mechanized removal)
  - ✓ Presence other significant species (Russian olive, willow, cottonwood).

    Note that for some rivers such as the White, South Platte, Republican, and Purgatoire that Russian olive was the dominant invasive species and additional mapping was performed to inventory these infestations.

These attributes were initially recorded on a Personal Data Assistant (PDA) system with standardized data collection software (EcoNab) integrated with a GPS unit. As the mapping work progressed, a rugged quality field laptop computer with ArcView 9 and preloaded NAIP imagery was used to allow for on-site data entry. Digital photos representing each data point were also taken to visually display the infestations. Additionally, a field notebook documenting other significant observations (i.e. access issues, land use, etc.) was recorded at every data point.

5) The field imagery data was transferred into shapefiles using ArcGIS software and attached to the tabular data listed above. These shapefiles were subsequently utilized to calculate the total areas of infestation in any specific region.

#### **Deliverables:**

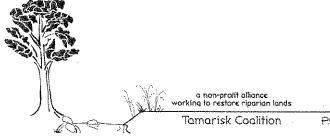
1) Shape files characterizing each infestation with an attribute table including the following fields: acreage, percent cover, average height, percent riparian, maturity, accessibility, and other significant species presence. These shapefiles have added value in that they can be overlaid with other GIS referenced information; e.g., county property boundaries and ownership maps.

- 2) Digital photo album of the infested areas corresponding to each data point.
- 3) Auxiliary notebook describing significant observations.
- 4) PDFs of river segments showing shapefiles overlaid onto aerial photos and Excel spreadsheet tables are provided as user-friendly formats to present usable information for people without GIS expertise.
- 5) Excel spreadsheets provide individual details for each shapefile as well as watershed summaries. The summaries contain infestation acreage, percent cover, estimates of existing and future water losses, and estimates of total restoration costs including planning, control, revegetation, monitoring, and maintenance. These cost estimates are based on algorithms developed in *Options for Non-Native Phreatophyte Control* (March 2006, Tamarisk Coalition). The cost equations incorporate best management practices coupled with an Integrated Pest Management approach based on three variables percent tamarisk cover, accessibility, and average width of infestation.

#### **System Requirements:**

System requirements to use the inventory and mapping data require the following computer and software capability.

- 1) The minimum requirement for viewing the shapefiles is a free program called ArcExplorer, available at <a href="http://www.esri.com/software/arcexplorer/">http://www.esri.com/software/arcexplorer/</a>.
- 2) Computer specs: Access the ESRI site at <a href="www.esri.com">www.esri.com</a> for specific system requirements.
- Microsoft Word and Excel software are used for viewing reports and spreadsheets.
   Adobe Reader is required for PDFs of river segments showing shapefiles overlaid onto aerial photos.
- 4) Digital photos: Any software capable of viewing JPEGs is sufficient.

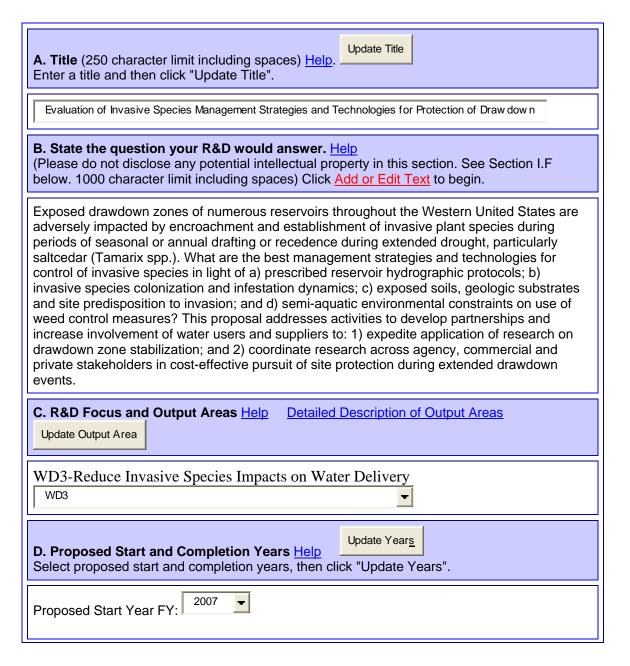


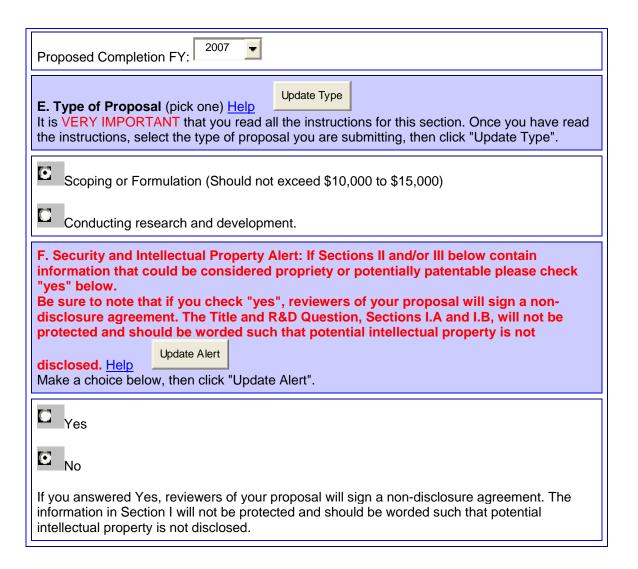
# ID: 9116 - Evaluation of Invasive Species Management Strategies and Technologies for Protection of Drawdown Zones in Annually Drafted or Drought-Affected Reservoirs

Submitted by: Ken Lair, Ecological Research and Investigations, 86-68220, 303.445.2005, klair@do.usbr.gov

Show me the history of this proposal. Previous versions include: 2006

## I. General Information





# II. Proposed Research End Products, Completion Dates, Need, and Benefit

A. No.	R&D End Product Category	How will your end product (s) be documented	Scheduled Completion Date	Add New End Product
1	Tools to measure effects of water operations on ecosystems Evaluation and selection of representative reservoirs significantly impacted by weed encroachment in drawdown zones.	Results of this outcome will be included in Report for Output No. 2.	01/31/2007	Edit Delete
2	Tools to offset or reduce impacts on water projects due to environmental constraints Inventory and assessment of BOR drawdown zone	Report	08/30/2007	Edit Delete

	characteristics, invasion predisposition factors, and reservoir impacts from drawdown zone exposure and weed encroachment for selected reservoirs.			
3	Tools to measure effects of water operations on ecosystems Development of partnerships, including advocates and research collaborators with commitment of funds or IKS.	Results of this outcome will be included in Report for Output No. 4.	09/30/2007	Edit Delete
4	Tools to measure effects of water operations on ecosystems Development of plans, strategies, and draft experimental designs for continuing collaborative research.	Report	09/30/2007	Edit Delete

#### **B. Need and Benefit**

Describe existing capabilities available to Reclamation from both internal and external sources. Explain why they are insufficient to adequately serve Reclamation's needs. (4000 character limit including spaces) Help Add or Edit Text

The Bureau of Reclamation (BOR) operates and maintains numerous multi-purpose reservoirs throughout the Southwestern United States. Many of these reservoirs are currently experiencing adverse environmental and ecological impacts to shoreline drawdown zones as a result of extended drought progressively and perennially lowering water levels. Exposure of bare shoreline soils below high-water line (BHWL) during these drawdown events greatly increases frequency and severity of weed infestation problems, particularly from aggressive, perennial species such as saltcedar (Tamarix spp.), Canada thistle (Cirsium arvense), and knapweeds (Centaurea spp.). Prescribed annual or seasonal drafting protocols for hydroelectric generation, flood storage, maintenance of downstream fisheries minimum flows or conservation pools, and other purposes also exacerbate these problems. Invasive species growth on exposed shorelines poses severe risk for new or increased dissemination of weed seed and other reproductive propagules to surrounding landscapes and ecosystems, including ecologically sensitive riparian sites along reservoir tributaries. Lacustrine fisheries habitat within littoral zones is also adversely impacted by erosion loss or wave-induced diffusion of shoreline substrate fines, thereby favoring or shifting plant establishment and composition during drawdown events toward aggressive annual (ruderal) or perennial invasive species with germination and dormancy strategies highly adapted to such altered soil environments. Subsequent increase of dead, decomposing weed biomass contributes to aquatic eutrophication in littoral (shallows) shoreline habitat.

Effective strategies for addressing these invasive species management concerns have not been developed or refined to-date, in part because of the perceived ephemeral nature of reservoir drawdown events. In light of longer-term impacts resulting from recent extended drought and/or longer drafting periods, these strategies are particularly needed in terms of: a) scientific soundness of treatment approaches; b) correlation to reservoir hydrologic dynamics (i.e., treatment windows, treatment residuals in soils, etc.); c) development of rapid-response shoreline revegetation protocols for use during drawdown events, utilizing inundation-tolerant desirable species to stabilize the site and minimize weed colonization; and d) assessment of predisposition of certain reservoir locations or soils to weed infestation in relation to regional weed population pressure, topographically influenced micro-climate, and transportation vectors. Evaluation of herbicide chemistry in relation to physical leaching or retention properties in exposed shoreline soils altered by long-term inundation and wave action has not been studied. Similarly, uncertainty as to site classification in reservoir drawdown zones by

State agencies responsible for implementation and monitoring of aquatic vs. non-aquatic labeled application of herbicides also suggests the need for research that will not only determine best management practices in light of environmental constraints, but also refine and codify permissable herbicide products within these zones. Involvement and commitment of resources from these state agencies with other agencies, cooperators and research collaborators to address this lack of appropriate strategies and technologies is a prime thrust of this scoping proposal.

C. Why is this the responsibility of Reclamation and not another government agency or the private sector. (3000 character limit including spaces) Help

Add or Edit Text

Reclamation is responsible for environmental health and safety of physical facilities that the agency operates or controls, including ecological health and sustainability of associated, supporting land forms. Reclamation is a member agency of the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW), with lead responsibilities for management and research for aquatic and riparian invasives. Reclamation is also responsible for the identification and proper management of pests on Reclamation lands and at Reclamation-owned facilities in accordance with the national policies set out in FIFRA, Federal Noxious Weed Act, Carlson-Foley Act, and applicable State and local laws and standards. [Authority: Federal Insecticide Fungicide and Rodenticide Act (FIFRA), as amended; Federal Noxious Weed Act of 1974 (Public Law 93-629 as amended, see Public Law 101-624 for Section 15); Carlson-Foley Act of 1968 (Public Law 90-583, 82 Stat. 1146) concerning Control of Noxious Plants on Federal Lands; 517 DM 1. Pesticide Use Policy].

These responsibilities include prevention or control of the introduction or dispersal of noxious weeds into previously uninfested areas by vectors such as vehicle/equipment transport, project activities, or reservoir operation and maintenance. Reclamation manages pests and the environment so as to balance cost, benefits, public health, and environmental quality, coordinating with other land management agencies to ensure that the appropriate best management practices are implemented. The State Departments of Agriculture and/or Natural Resources, adjoining land management agencies, and county agricultural commissions are incorporated into development of measures to avoid the dispersal of noxious weeds.

Because of these responsibilities, and through the research capabilities and resources of the Ecological Research and Investigations Group, Reclamation is in best position to lead in developing partnerships and coordinating research efforts on these reservoir drawdown sites to determine needed prescriptions for prevention measures; timeliness of weed management; when management should be initiated; at what frequency treatments should be applied; what physical, cultural, biological, or chemical strategies should be employed; and the effect of the treatment(s).

# III. Proposed Steps to Produce the R&D End Products Listed in Section II

A. Briefly Describe: i. The methods and approaches you will use to answer your research question and

ii. How you will share your research end product with peers and stakeholders. (4000 character limit including spaces) Help Add or Edit Text

i. For this scoping proposal, sample reservoirs (n <= 6) will be selected for further examination of study

feasibility and development of contributing partnerships and research collaboration based on an initial survey of reservoir hydrology / hydrography; history, nature and severity of weed infestation attributable to periodic drawdown; suitability for experimental treatment application (including equipment access); proximity and degree of weed dissemination threat to downstream land uses, reservoir tributaries, sensitive riparian / wetland areas, and other natural resources; and suitability for extrapolation of data and findings to similar reservoir systems.

Upon completion of initial sample reservoir selection, existing resource attribute data will be augmented by limited field sampling and data collection for specific a) soil parameters (texture / structure, salinity / SAR, pH, organic matter, nutrient status, soil microbial communities); b) vegetation parameters (invasive species composition, diversity / richness, canopy structure / cover, density / frequency, associated/adjacent plant communities, including weed populations); c) climate parameters (long-term means and seasonal / annual patterns for precipitation, evapotranspiration, wind, soil temperature and moisture regimes); and d) hydrologic parameters (reservoir hydrographic protocols (fill and drawdown patterns / duration / history), groundwater depth / quality, proximity and hydrologic relationship to tributary streams (perennila and ephemeral).

From these parameter evaluations, a subset of sample reservoirs will be chosen as most appropriate and utilitarian for potential design and installation of experimental trials, pending final partnership commitment, approval of scoping proposal results and provision of ongoing research support funding.

ii. Diverse partnerships with other BOR office, agency (e.g., USACOE) and private sector researchers will comprise a significant component of this work, enhancing dissemination and deployment of results. Results of partnership development and interest in the project will be reported via USBR Report (e.g., Technical Memorandum). Future research results from an expanded project will be jointly published with cooperators in peer reviewed journal publications and additional Reclamation technical reports. Progress reports, and links to outside publications, will be posted on Reclamations IPM web site. Recommendations and guidelines (decision support criteria, including self-assessment form) for evaluating site-specific weed management protocols and restoration potential will be issued in technical Reclamation reports.

List the sequential steps that you will take to conduct your R&D and share the results with end users and peers to promote adoption of your research end product.

B. No.	Proposed Steps To Produce the Research End Products Outputs listed in Section II (Each Task description is limited to 400 characters but there is no limit on the number of tasks you can enter.)	Requested S&T Budget for Each Step	Scheduled Completion Date	Add New Step
1	Evaluation and selection of representative reservoirs significantly impacted by weed encroachment in drawdown zones.	\$2,500.00	01/31/2007	Edit Delete
	Inventory and assessment of biotic and abiotic drawdown zone characteristics, invasion predisposition factors, and reservoir impacts from drawdown zone exposure and weed encroachment for selected reservoirs.	\$7,500.00	08/30/2007	Edit Delete
3	Development of partnerships, including advocates and research collaborators with commitment of funds or IKS.	\$2,500.00	09/30/2007	Edit Delete
4	Development of plans, strategies, and draft experimental designs for continuing collaborative research.	\$2,500.00	09/30/2007	<u>Edit</u> <u>Delete</u>
Tota	al Funding	\$15,000.00		

## IV. Fiscal Year S&T Program Funding Request

Fiscal Year	Funding Requested Add New Fiscal Year
2007	\$15,000.00 <u>Edit</u> <u>Delete</u>
Total Requested S&T Funding	\$15,000.00

# V. Partners - Cost-Sharing With Others Who Have A Stake in This Effort

No.	First	Partner Last Name	Organization	Phone	E-mail	Firm or Potential	Inside or Outside	Add New Partner
1	Michael	Delvaux	NK-300	308- 389- 5314	mdelvaux@gp.usbr.gov	Firm	Inside	<u>Edit</u>
2	Jaci	Gould	EC-1300	970- 962- 4338	jgould@gp.usbr.gov	Potential	Inside	<u>Edit</u>
3	Stephen	Grabowski	PN-6540	209- 727- 5319	sgrabowski@pn.usbr.gov	Firm	Inside	<u>Edit</u>
4	Jean	Van Pelt	Southeastern Colorado Water Conservancy District	719- 948- 2023	jean@secwcd.com	Potential	Outside	<u>Edit</u>

You must add the partner above before you describe the contribution below.

No.	Partner Last Name	Description of Partner Contribution	Cash / IKS	Year	Projected Contribution Value	Add New Cntrb
1	Delvaux	Technical review of experimental approach; assessment of vegetation and hydrologic data gaps and availability; assistance with site selection, sampling design and field data collection.	IKS	2007	\$5,000.00	Edit Delete
2	Gould	Technical review of experimental approach; assessment of vegetation and hydrologic data gaps and availability; assistance with site selection, sampling design and field data collection.	IKS	2007	\$2,500.00	Edit Delete
3	Grabowski	Technical review of experimental approach; assessment of vegetation and hydrologic data gaps and availability; assistance with site selection, sampling design and field data collection.	IKS	2007	\$2,500.00	Edit Delete

4	Van Pelt	Technical review of experimental approach; assessment of vegetation and hydrologic data gaps and availability; assistance with site selection, sampling design and field data collection.	IKS	2007	\$2,000.00	Edit Delete	
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# VI. Advocates - List Reclamation Managers, Other Stakeholders, and Project Output Beneficiaries That Advocate this Proposed Effort

First Name	Last Name	Title	Organization	Phone	Email	Add New Advocate
Michael	Delvaux	Natural Resource Specialist	NK-300	308-389- 5314	mdelvaux@gp.usbr.gov	Edit Delete
Jaci	Gould	Resource Manager	EC-1300	970-962- 4338	jgould@gp.usbr.gov	Edit Delete
Stephen	Grabowski	Research Fisheries Biologist	PN-6540	208-378- 5030	sgrabowski@pn.usbr.gov	Edit Delete
Chris	Holdren	Group Manager	D-8220	303-445- 2178	choldren@do.usbr.gov	Edit Delete
Eric	Lane	State Weed Management Coordinator	Colorado Department of Agriculture	303-239- 4182	eric.lane@ag.state.co.us	Edit Delete
Jean	Van Pelt	Conservation Outreach Coordinator	Southeastern Colorado Water Conservancy District	719-948- 2023	jean@secwcd.com	Edit Delete

## VII. Research Beneficiaries and R&D Locations

#### A. Primary Research Beneficiaries



#### **B. R&D Location**

Field/Office/Lab Based	Area Office	Primary Field Contact	Add New Location
Field based	Nebraska-Kansas	Michael Delvaux, mdelvaux@gp.usbr.gov NK-300	Edit Delete
Field based	Eastern Colorado	Jaci Gould, jgould@gp.usbr.gov EC-1300	Edit Delete
Field based			Edit Delete

#### **C. NEPA Compliance Contact**

First Name	Last Name	Organization	E-mail	Location of NEPA Document	Enter NEPA Compliance Contact Information
Gregory	Reed	D-8210	greed@do.usbr.gov	Denver TSC (D-8220/8210) and at jurisdictional Area Offices.	Edit Delete

## **VIII. Project Team**

First Name	Last Name	Discipline/Speciality	Organization	Phone	E-mail	PI	Add New Member
Kenneth	Lair	Restoration Ecologist / Research Botanist	D-8220	303- 445- 2005	klair@do.usbr.gov	Yes	Edit Delete
Michael	Delvaux	Natural Resource Specialist	NK-300	308- 389- 5314	mdelvaux@gp.usbr.gov	No	Edit Delete
David	Sisneros	Research Botanist / Aquatic Weed Management Specialist	D-8220	303- 445- 2228	dsisneros@do.usbr.gov	Yes	Edit Delete
Stephen	Grabowski	Research Fisheries Biologist	PN-6540	208- 378- 5030	sgrabowski@pn.usbr.gov	No	Edit Delete
Scott	O'Meara	Research Botanist	D-8220	303-	someara@do.usbr.gov	Yes	<u>Edit</u>

	445-		<u>Delete</u>
	2016		

## IX. Potential Technical Reviewers

Enter the names and contact information for three technical reviewers outside of Reclamation that are qualified to review your research proposal. Please enter a list of keywords that describe the expertise of the potential technical reviewer. To add rows for additional potential technical reviewers, click the Add New Reviewer link. Help

First Name	Last Name	Field of Technical Expertise	Key Words Associated with Potential Reviewer's Expertise	Affiliation	Phone	E-mail	Add New Review
Dr. George	Beck	Weed Scientist; Extension Weed Management Specialist, Colorado	No key words yet	Department of Bioagricultural Sciences, Colorado State University	970- 491- 7568	K.George.Beck@colostate.edu	Edit Delete
Eric	Lane	Weed Management; State Weed Management Policy and Regulation Formulation	No key words yet	Colorado Department of Agriculture	303- 239- 4182	eric.lane@ag.state.co.us	Edit Delete

## X. Comments and Additional Information

Comments and Additional Information Help Add or Edit Text

Use this space to provide any additional inforamtion regrading this proposed effort (4000 characters limit including spaces)

RESUBMITTED FOR FY2007; NOT FUNDED IN FY2006.

This project still has GREAT merit and timeliness in light of continuing, worsening drought conditions throughout the Western US. This climatic trend will continue to exacerbate invasion and infestation in reservoir drawdown zones through a) further reduction of reservoir storage pools, exposing additional acres to infestation and resultant seed dispersal to neighboring lands; and b) reduction in vigor of native species due to drought stress, enabling invasive species (particularly annual grasses and depp, taprooted perennials) to gain a competitive advantage on shoreline sites.

# Addendum Part B. 5. A. Please provide a copy of the proposed scope of work.

nonnative, phreatophyte trees throughout the Arkansas River watershed. The framework will include a plan and a data base that can be used as management tools. The plan and data base will incorporate templates and protocols. The term *template* defines what actions that needs to be taken, and the term *protocol* defines how the actions will be performed. The templates and protocols will offer guidelines and criteria for decision making while carrying out the activities associated with various aspects of the nonnative phreatophyte tree control, revegetation and rehabilitation, monitoring, and long-term management. Thus, the intent is to ensure that selected approaches are consistent, effective, efficient, and decisions and actions are well documented. The plan will encourage public land managers and private landowners to undertake coordinated control and restoration measures. It will identify long-term objectives to address infestations and define measures of success. As the project matures, the templates and protocols will be continuously updated to improve the efficiency and effectiveness of the control, revegetation and rehabilitation, monitoring, and long-term management and maintenance.

The purpose of the Plan is to provide valuable leadership and tools to initiate a basin-wide effort for long-term management of nonnative phreatophyte trees. Currently, there are a few projects being undertaken in the Basin, but they are small and fragmented in their efforts and work is not well documented. The need for a well-thought out plan that outlines the steps for control, revegetation, and restoration, and monitoring techniques for various situations will provide consistent, effective and efficient decisions and actions that will be well documented. The District is supported by most of these groups and others in its quest to develop the much needed plan and data base that will assist in the challenge of attaining long-term management of nonnative phreatophyte trees in the basin.

The Arkansas River watershed encompasses twenty two counties in southeastern Colorado. They are Lake, Chaffee, Park, Saguache, Teller, Fremont, Custer, Huerfano, Costilla, Las Animas, Pueblo, El Paso, Elbert, Lincoln, Crowley, Otero, Baca, Prowers, Bent, Kiowa, Cheyenne, and Kit Carson. Within the watershed there are 13 water districts defined by the Colorado Department of Natural Resources (DNR). The 13 districts are located in Department of Water Resources (DWR) Division 2 (See Addendum Part B. 5. A. – Map) The Districts are: District 10 – Fountain Creek basin, District 11 - Arkansas River from the headwaters to the Town of Salida, District 12 - Arkansas River from the Town of Salida to Dept. of Natural Resources stream flow gage at Portland, District 13 - Wet Mountain Valley basin, District 14 - Arkansas River Portland gage to the town of Fowler, District 15 - Saint Charles River basin, District 17 - Cucharas River basin, District 17 - Arkansas River from Fowler to the city of Las Animas, District 18 - Apishapa River basin, District 19 - Purgatoire River basin, District 66 - Cimmaron River basin, District 67 - Arkansas River from Las Animas to the Kansas state line, and District 79 - Huerfano River basin.

## Addendum Part B. 5. A. (Page 2) Please provide a copy of the proposed scope of work.

The constraints of the size of this project will necessitate a multi-pronged approach. Management efforts will have two focuses and both approaches will be addressed at the same time. One focus will be on the upper reaches of the water district and work downstream toward the main-stem. The Plan will divide the watershed into segments utilizing the existing boundaries of the 13 water districts. The systematic approach to long-term management will begin in the headwater areas of each watershed or water district within the Basin and will continue downstream. Each water district within the Basin will be further subdivided into the main stem, tributaries, perennial streams, intermittent streams, ephemeral streams, dry washes, canals and ditches. Each subdivision will be further divided into subsets of smaller denominations to properly define areas for management activities.

The other multi-pronged approach will focus on certain health and safety situations when a headwater approach may not be the ideal method, particularly in areas of special concern. This additional approach will focus on monotypic areas of heavy infestation and/or with health, safety, and environmental concerns . These areas will be appropriately prioritized and acted upon in a timely manner. In addition, local jurisdiction may have restrictions or constraints that require different priorities and approaches. The strategy for control and management must be designed to result in a progressive reduction of the overall infestation.

Once the Plan is completed, a data base will be developed to assist land managers and owners in determining proper control, revegetation, monitoring and maintenance strategies. This will be available on an easy to access interactive web site. These will serve as valuable resource tools to assist landowners and land managers in selecting the appropriate control, restoration, and management method for a particular level of infestation and land use. The data base will also assist in tracking progress and evaluating management practices within the Basin.

The Plan development will cost approximately \$200,000. Twenty thousand dollars will be used for District staff and a Technical Advisory Committee to develop the Strategic Basin Plan. Approximately \$75,000 will be needed to develop the interactive data base, web site, and publication costs. The mapping and engineering cost will be approximately \$100,000. This will include costs for mapping and GIS specialists, County Planning & Engineering Departments and Tamarisk Coalition consultations. An additional, \$5,000 will be needed to meet travel, meeting and office expenses. (Please see Addendum Part B. 5. B. – Budget)

The District is also applying for funds from a Department of Local Affairs grant proposal to develop the Strategic Plan and complete the mapping. Bent County has graciously

## Addendum Part B. 5. A. (Page 3) Please provide a copy of the proposed scope of work.

agreed to be the lead county on this proposal, because DOLA requires a government entity to be the applicant. The District will provide technical and managerial support for the grant and plan development. The grant request from DOLA will be for \$50,000. The deadline for supporting entities to report is March 15, 2007 and the DOLA grant will be submitted before the April 1, 2007 deadline.

Please, see Addendum Part B. 5. B. for detailed budget. Please, see Addendum Part B. 5. C. for a project schedule.

## Addendum Part B.5.B. – Budget Summary

BUDGET				
Expenses	\$200,000			
•	Cash	In-Kind		
Plan Development	\$20,000			
SECWCD Staff				
Conservation Outreach Coordinator				
400 hrs @ \$32.63 hr.	\$13,052			
Executive Director	Ψ13,032			
20 hrs. @ \$112.32 hr.	\$2,246			
Director of Finance				
50 hrs. @ \$50.75 hr.	\$2,537			
Admin. Associate				
15 hrs @ \$22.11 hr.	\$332			
Admin. Manager	Φ201			
5 hrs. @ \$40.24 hr	\$201	¢1 622		
Technical Advisory Committee		\$1,622		
Office Expenses	\$1,500			
Misc., blueprints, photos, GIS	. ,			
maps	\$1,000			
Copier	\$100			
Postage	\$400			
Public Education Expenses	\$75,000			
Publication of Plan for	,			
Distribution and Promotion	\$7,000			
Website Development	\$18,000			
Development of Data Base	\$50,000			
Meeting Expenses	\$2,000			
Organizational Meetings	\$1,000			
Outreach/Educational Meetings	\$1,000			
Travel	\$1,500			
3,000 miles @ \$0.485/mile	\$1,500			
10 - 300 miles round trips				
M : 40 :	φ100 000			
Mapping/Engineering Expenses	<b>\$100,000</b> \$40,000			
Contract for GIS Mapping SECWCD Director of Water &	φ <del>4</del> υ,υυυ	\$5,700		
Engineering 100 hrs @ \$57.08 hr.		ψ5,100		
SECWCD Engineering Support		\$4,300		
Staff 160 hrs @ \$28.05 hr.				

## Addendum Part B.5.B. – Budget Summary

COMMITTED INVINID ¢		
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AMOUNTS FROM VARIOUS COUNTIES		
County GIS Specialists		\$25,000
1		\$10,000
County Figure Departments		ŕ
County Engineering support Tamarisk Coalition Consultations		\$5,000
Tamarisk Coantion Consultations		\$10,000
Income	\$153,340	
Arkansas Basin Roundtable	\$50,000	
Grant		
Department of Local Affairs	\$50,000	
Grant		
<b>Committed Cash Contributions</b>	\$17,000	
Pueblo County		
Otero County		
Crowley County		
Bent County	\$7,000	
Prowers County	\$5,000	
Fremont County		
El Paso County		
Huerfano County		
Las Animas County		
Baca County		
Custer County		
Chafee county		
Lincoln County		
Kiowa County		
Cheyenne County		
Elbert County		
Teller County		
Energy Companies		
The Nature Conservancy		
Purgatoire River WCD	\$5000	
Lower Arkansas WCD		
Upper Arkansas WCD		
Soil Conservation Districts		
Committed In-kind		\$36,340
Contributions		<b>4.7.000</b>
Bent County		\$5,000
Crowley County		
Fremont County		
El Paso County		<b></b>
Prowers County		\$5,240
Pueblo County		
Otero County		

## Addendum Part B.5.B. – Budget Summary

Huerfano County	
Las Animas County	
Baca County	
Custer County	
Chaffee County	
Lincoln County	
Kiowa County	
Cheyenne County	
Elbert County	
Teller County	
Purgatoire River WCD	
Southeastern Colo. WCD	\$10,000
Lower Arkansas WCD	
Upper Arkansas WCD	
The Nature Conservancy	
CO State Forest Service	\$1,200
CSU Cooperative Extension	\$1,000
Soil Conservation Districts	
USDA - NRCS offices	\$1,950
Southeast RC & D	\$1,950
Sangre de Cristo RC & D	
Tamarisk Coalition	\$10,000

## Addendum Part B. 5 C. Project Schedule

Tasks	<b>Completion Date</b>
Submit DOLA grant	April 2007
Develop Technical	May - June 2007
Advisory Committee	
GIS Mapping Project	June - December 2007
Development	
Plan Development	June - December 2007
Data Base Development	August 2007 – February
	2008
Publish & Distribute Plan	January 2008
Website development to	January – February 2008
house data base	
Outreach Programs	December 2007 – March
	2008

## Addendum Part B. 8. Evaluation Criteria

encompass the entire Basin. This funding will not only support plan development, but it will also enable the Basin to qualify for other sources of funding to implement the Plan.

- d. The "window of opportunity" that is offered is to have the Basin Plan in place and ready to go when the newly passed Federal Legislation HR 2720 "The Salt Cedar and Russian Olive Control Demonstration Act" is appropriated. By having a Plan already in place will increase the Basin's chances of being funded under HR 2720.
- e. The Plan mapping project and data base will be completed in its entirety by February 2008.
- f. The Southeastern District has shown our commitment to this problem since passing a Resolution in June 2003 to take the lead for the implementation of regional projects. In addition, District staff has been appointed to represent the Arkansas Basin on the Board of Directors of the Tamarisk Coalition. Other staff members have actively participated with groups throughout the Basin in support of their projects.
- g. The District is providing in-kind contributions as well as many of the counties and entities in the Basin to support the Plan. Cash contributions will come from the counties, municipalities, and entities and grant funding from the Department of Local Affairs.
- h. There is a need for financial assistance in the Arkansas Basin. Many of the counties and municipalities are struggling financially, but they recognize the importance of this project and have agreed to support it with in-kind contributions of staff time and expertise.

#### Meeting Water Management Goals and Objectives and Identified Water Needs

- i. By completing the mapping project for the entire Basin it will enable us to evaluate the water loss and savings that is possible by implementing the Plan.
- j. The Plan development meets many of the SWSI objectives: Optimize existing and future water supplies, enhance recreational opportunities, and provide for environmental enhancements.
- k. The plan development will promote water conservation by providing landowners and managers the tools for eliminating phreatophytes.
- l. The Southeastern District has a Five year Water Management and Conservation Plan which has been approved by the Bureau of Reclamation. One of the conservation measures is a Tamarisk Control Program.
- m. According to the research the Tamarisk Coalition has performed the phreatophytes along the main stem of the Arkansas are stealing 46,600 acre-feet per year. When the

## Addendum Part B. 8. Page 2 Evaluation Criteria

water loss from the major tributaries and reservoirs are added in an additional 12,000 acre feet per year is being lost. This amount is above and beyond what native vegetation would use. If this problem is not addressed, future water losses from "infilling only (no expansion from existing infested areas) are estimated to be 86,000 acre-feet per year on the river and 44,000 acre feet on the major tributaries and reservoirs.

n. The Plan incorporates a riparian and upland restoration component that will restore native plants and habitats once control measures have been implemented. In addition, the Plan will incorporate long-term management options to ensure the invasives do not rebound.

#### The Water Activity Addresses Issues of Statewide Value

- o. The Plan will provide tools for long-term management which will help to sustain agriculture land, open space, increase accessibility to the river for recreation and livestock and wildlife access, reduce channelization that causes flooding, and will reduce the risk of wildfires.
- p. By developing and implementing the Plan the water that will be saved can assist in providing necessary water to meet the State's obligation for the Arkansas Compact requirements.
- q. By developing and implementing the Plan the riparian health of the Arkansas River Basin will be enhanced for all species by restoring the native plant and animal communities.
- r. The proposed Plan, mapping project, monitoring programs and the interactive data base can be used as model for other Basins in the state to utilize. The benefits that will come from the development of this Plan will far out weigh the costs of development.
- s. CWCB has already invested time, energy, and dollars in mapping the main-stem of the Arkansas and the major tributaries and reservoirs. It is clear that the long-term management of the non-native phreatophytes in Colorado is in the best interest of the Board and the State.
- t. The development of a Basin Plan will greatly increase the chances for the Arkansas Basin to receive funding to implement the Plan through the federal legislation HR 2720. The legislation states to qualify for funding there needs to be regional and state plans in place.