

KC-373-10



Meeting Date: NOV. 8, 2010  
 Agenda Item No:

<b>Kitsap County Board of Commissioners</b>			
<b>Office/Department:</b> Emergency Management			
<b>Staff Contact &amp; Phone Number:</b> Phyllis A. Mann (360) 307-5871			
<b>Agenda Item Title:</b> Nooksack Tribe Intergovernmental Cooperative Working Agreement			
<b>Recommended Action:</b> Approve this Intergovernmental Cooperative Working Agreement between Nooksack Indian Tribe and KCDEM to allow KCDEM to administer contract with Watershed Sciences on Nooksack Indian Tribes behalf.			
<b>Summary:</b>	This agreement authorizes Kitsap County Department of Emergency Management to administer contract with Watershed Sciences on behalf of Nooksack Indian Tribe Natural Resources Department to collect LiDAR survey data for portions of the Middle Fork and North Fork Nooksack Rivers, and Rocky Creek.		
<b>Attachments:</b>	1. Original Contract		
<b>Fiscal Impact for this Specific Action</b>			
<b>Expenditure required for this specific action:</b>	\$0		
<b>Related Revenue for this specific action:</b>	\$26,116.00		
<b>Cost Savings for this specific action:</b>	\$0		
<b>Net Fiscal Impact:</b>	\$26,116.00		
<b>Source of Funds:</b>	Intergovernmental Agreement		
<b>Fiscal Impact for Total Project</b>			
<b>Project Costs:</b>	\$26,116.00		
<b>Project Costs Savings:</b>	\$0		
<b>Project Related Revenue:</b>	\$26,116.00		
<b>Project Net Total:</b>	\$0		
<b>Fiscal Impact (DAS) Review</b>			
<b>Departmental/Office Review &amp; Coordination</b>			
<b>Department/Office</b>	<b>Elected Official/Department Director</b>		
Emergency Management	Phyllis A. Mann		
<b>Contract Information</b>			
<b>Contract Number</b>	<b>Date Original Contract or Amendment Approved</b>	<b>Amount of Original Contract Amendment</b>	<b>Total Amount of Amended Contract</b>



**Kitsap County**  
**CONTRACT REVIEW SHEET**  
 (Chapter 3.56 KCC)

**A. CONTRACT INFORMATION**

1. Contractor Nooksack Tribal Council  
 2. Purpose LiDAR services – Intergovernmental Agreement  
 3. Contract Amount \$26,116.00 Disburse  Receive   
 4. Contract Term Upon signature – until cancelled by either party  
 5. Contract Administrator Phyllis Mann Phone (360) 307-5871  
 Approved: *Phyllis Mann* Date 09-16-2010  
 Department Director

**B. AUDITOR – ACCOUNTING INFORMATION**

1. Contract Control Number KC-373-10  
 2. Fund Name K-PREP  
 3. Payment from-Revenue to CC/Account Nbr 1061.3380.90  
 4. Encumbered By *Debra Stork* Date 9-20-10

**C. AUDITOR'S ACCOUNTING – GRANTS REVIEW**  
*Signature required only if contract is grant funded*

1.  Approved  Not Approved  
 Reviewer *Debra Stork* Date 9-20-10  
 2. Comments:

**D. ADMINISTRATIVE SERVICES DEPARTMENT – RISK MANAGER REVIEW**

1.  Approved  Not Approved  
 Reviewer *Timothy W. Perry* Date 9/24/2010  
 2. Comments:

**E. ADMINISTRATIVE SERVICES DEPARTMENT – BUDGET MANAGER REVIEW**

1.  Approved  Not Approved  
 Reviewer *[Signature]* Date 10-12-10  
 2. Comments:

**F. PERSONNEL DEPARTMENT – PERSONNEL DIRECTOR REVIEW**  
*Signature required only if union or employment contract*

1.  Approved  Not Approved  
 Reviewer \_\_\_\_\_ Date \_\_\_\_\_  
 2. Comments:

**G. PROSECUTING ATTORNEY**

Approved as to form *Note - pagination should be corrected*  
 Reviewer *Shelley G. Krup* Date 10-14-10

**H. CERTIFICATION BY CONTRACT ADMINISTRATOR: THIS CONTRACT IS  
 READY FOR CONSIDERATION BY THE AUTHORIZED CONTRACT SIGNER.  
 (For contract signing authority, see KCC 3.56.075)**

Contract Administrator Signature: \_\_\_\_\_ Date \_\_\_\_\_  
 Date Approved by Authorized Contract Signer: \_\_\_\_\_ Date \_\_\_\_\_  
 RETURN SIGNED ORIGINALS TO: DEM  
 Michele – mmoen@co.kitsap.wa.us

**KITSAP COUNTY**  
**DEPT. OF EMERGENCY MANAGEMENT**  
911 Carver Street  
Bremerton, WA 98312  
(360) 307-5870

**INTERGOVERNMENTAL COOPERATIVE PURCHASING AGREEMENT TO PURCHASE LIDAR DATA  
FOR THE MIDDLE FORK NOOKSACK RIVER WATERSHED**

KC-373-10

THIS AGREEMENT is between Nooksack Indian Tribe, a sovereign Native American tribal government, and Kitsap County, a municipal corporation, all in the State of Washington.

WITNESSETH:

WHEREAS, The Interlocal Cooperation Act, as amended and codified in Chapter 39.34 of the Revised Code of Washington provides for Interlocal cooperation between governmental agencies; and

WHEREAS, Chapter 39.33 of the Revised Code of Washington provides for the intergovernmental disposition of property, and

WHEREAS, both parties are required to make certain purchases by formal advertisement and bid process, which is a time consuming and expensive process; and it is in the public interest to cooperate in the combination of bidding requirements to obtain the most favorable bid for each party where it is in their mutual interest; and

WHEREAS, the parties also wish to utilize each other's contracts where it is in their mutual interest;

NOW, THEREFORE, the parties agree as follows:

1. PURPOSE. The purpose of this agreement is to acknowledge the parties' mutual interest to jointly bid the acquisition of goods and services and disposition of property where such mutual effort can be planned in advance and to authorize the acquisition of goods and services and the purchase or acquisition of goods and services under contracts where a price is extended by either party's bidder to other governmental agencies;
2. ADMINISTRATION. No new or separate legal or administrative entity is created to administer the provision of this agreement. The Administrator of this agreement is the Director of Emergency Management of Kitsap County, Washington.
3. SCOPE. This agreement shall allow the following activities:
  - A. Purchase or acquisition of goods and services by each party acting as agent for either or both parties when agreed to in advance, in writing;
  - B. Purchase or acquisition of goods and services by each party where provision has been provided in contracts for other agencies to avail themselves of goods and services offered under the contract.
  - C. Disposal of goods by each party acting as agent for either, or both parties when agreed to in advance, in writing.
4. DURATION OF AGREEMENT - TERMINATION. This agreement shall remain in force until cancelled by either party in writing.
5. RIGHT TO CONTRACT INDEPENDENT ACTION PRESERVED. Each party reserves the right to contract

**COOPERATIVE PURCHASING AGREEMENT**

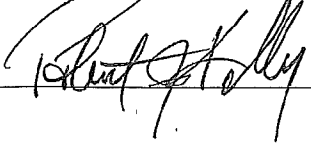
**NOOKSACK INDIAN TRIBE**

IN WITNESS WHEREOF, this agreement is signed this

\_\_\_\_\_ day of \_\_\_\_\_, 2010.

**APPROVAL**

Robert J. Kelly  
Nooksack Tribal Chairman

  
\_\_\_\_\_  
Date: 8/31/10

**BOARD OF COUNTY COMMISSIONERS  
KITSAP COUNTY, WASHINGTON**

\_\_\_\_\_  
JOSH BROWN, Chair

\_\_\_\_\_  
STEVE BAUER, Commissioner

\_\_\_\_\_  
CHARLOTTE GARRIDO, Commissioner

Attest:

\_\_\_\_\_  
Opal Robertson, Clerk of the Board

## COOPERATIVE PURCHASING AGREEMENT

independently for the acquisition of goods or services and or disposal of any property without notice to the other party and shall not bind or otherwise obligate the other party to participate in the activity.

6. COMPLIANCE WITH LEGAL REOUREMENTS. Each party accepts responsibility for compliance with federal, state or local laws and regulations including, in particular, bidding requirements applicable to its acquisition of goods and services or disposal of property.

7. FINANCING. The method of financing of payment shall be through budgeted funds or other available funds of the party for whose use the property is actually acquired or disposed. Each party accepts no responsibility for the payment of the acquisition price of any goods or services intended for use by the other party.

8. FILING. Executed copies of this agreement shall be filed as required by Section 39.34.040 of the Revised Code of Washington prior to this agreement becoming effective.

9. INTERLOCAL COOPERATION DISCLOSURE. Each party may insert in its solicitations for goods a provision disclosing that other authorized government agencies may also wish to procure the goods being offered to the party and allowing the bidder the option of extending its bid to other agencies at the same bid price, terms and conditions.

10. NON-DELEGATION/NON-ASSIGNMENT. Neither party may delegate the performance of any contractual obligation, to a third party, unless mutually agreed in writing. Neither party may assign this agreement without the written consent of the other party.

II. HOLD HARMLESS. Each party shall be liable and responsible for the consequences of any negligent or wrongful act or failure to act on the part of itself and its employees. Neither party assumes responsibility to the other party for the consequences of any act or admission of any person, firm or corporation not a party to this agreement.

12. SEVERABILITY. Any provision of this agreement, which is prohibited or unenforceable, shall be ineffective to the extent of such prohibition or unenforceability, without invalidating the remaining provision or affecting the validity or enforcement of such provision.

13. LiDAR SURVEY DATA. Kitsap County has contracted with Watershed Sciences, Inc. (KC-116-06) to provide public-domain high-resolution LiDAR topographic survey data in Washington and Oregon. Pursuant to paragraph 3.A of this agreement, Kitsap County will act as the agent for Nooksack Indian Tribe to obtain the data described in Exhibit A from Watershed Sciences, Inc. The total costs to Nooksack Indian Tribe are also set out in Exhibit A and will not exceed \$26,116. Kitsap County will obtain this data from Watershed Services, Inc. under its contract with Watershed Services.

June 9, 2010  
(revision 3)



517 SW 2<sup>nd</sup> Street, Suite 400  
Corvallis, Oregon 97333  
541.752.1204

529 SW 3<sup>rd</sup> Ave., Suite 300  
Portland, Oregon 97204  
971.223.5152

[www.watershedsciences.com](http://www.watershedsciences.com)

Treva Coe  
Nooksack Indian Tribe  
P.O. Box 157  
5016 Deming Rd.  
Deming, WA 98244  
360.592.5176, ext 3286

RE: LiDAR Data Acquisition Cost Proposal - Middle Fork Nooksack River, WA

Dear Treva,

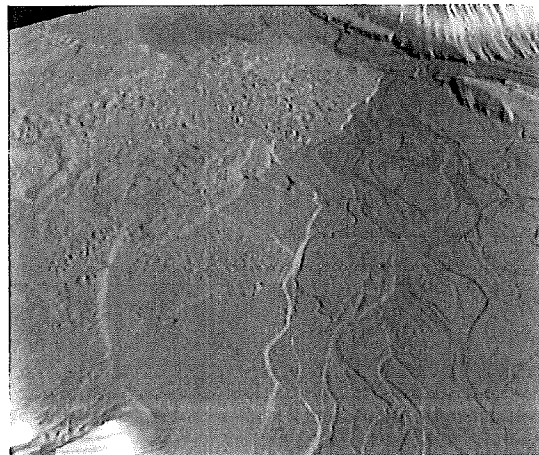
Watershed Sciences appreciates the opportunity to present this *revised* cost proposal for acquiring and processing high resolution LiDAR data for the Middle Fork Nooksack River, WA. *This proposal reflects final amended costs for the study area to match the Nooksack Tribe's budget.* The following is a brief synopsis of our services and associated costs for this area of interest. Data will be collected following Puget Sound LiDAR Consortium (PSLC) contract performance specifications and deliverables as for previous deliveries to the Tribe, summarized below. Costs reflect a structure independent of our negotiated cost structure with the PSLC, as the project area falls below 32,000 acres (minimum project area size for PSLC rates).

## Services

### **Airborne LiDAR**

Watershed Sciences will collect LiDAR data using a Leica ALS50 Phase II LiDAR or ALS60 system (with IMU) capable of emitting  $\geq 150,000$  laser pulses per second. A highly accurate, high resolution ( $\geq 8$  pulses/m<sup>2</sup>) LiDAR dataset will be produced with no gaps and ample buffers (at least 150 ft) around project boundaries. Data will be collected at  $\leq 30^\circ$  field of view ( $\pm 15^\circ$  from nadir), with a deliberate 50% overlap among swaths to minimize gaps and laser shadowing. The LiDAR system records up to four range measurements (returns) per pulse (first, second, third, and last).

*1-m bare earth DEM from the Mainstem, North and South Fork Nooksack Rivers Project Area, WA, 2008.*



Before each flight, the PDOP (Position Dilution of Precision) and expected satellite constellations will be determined for the survey day(s). During acquisitions, PDOP values will not exceed 3.5 (preferably targeting PDOP values of 3 or less), based upon a satellite constellation of 6 or more. All overlapping flight lines will be flown in opposing directions to maximize detection of swath to swath inconsistencies used to resolve system misalignments.

### ***Survey Control***

Watershed Sciences will use a minimum of two dual frequency DGPS base stations, recorded at 1-second epochs (1 Hz). Survey control is provided through use of existing NGS monuments in the study area, and/or establishment of additional controls by Watershed Sciences. Maximum baseline lengths between base controls and airborne GPS will not exceed 28 kilometers (15 nautical miles). After the static GPS data have been collected, the files will



be processed using the Online Positioning User Service (OPUS). Multiple sessions will be processed over the same monument to confirm antenna height measurements and reported OPUS position accuracy. Quality control real-time kinematic (RTK) survey data will be collected within the project area, with an established Root Mean Square Error (RMSE) of less than 2 cm. Absolute laser spot accuracies will be statistically analyzed based upon an adequate sample (~200-500) of well-distributed RTK ground survey points on open, bare earth surfaces with level slope.

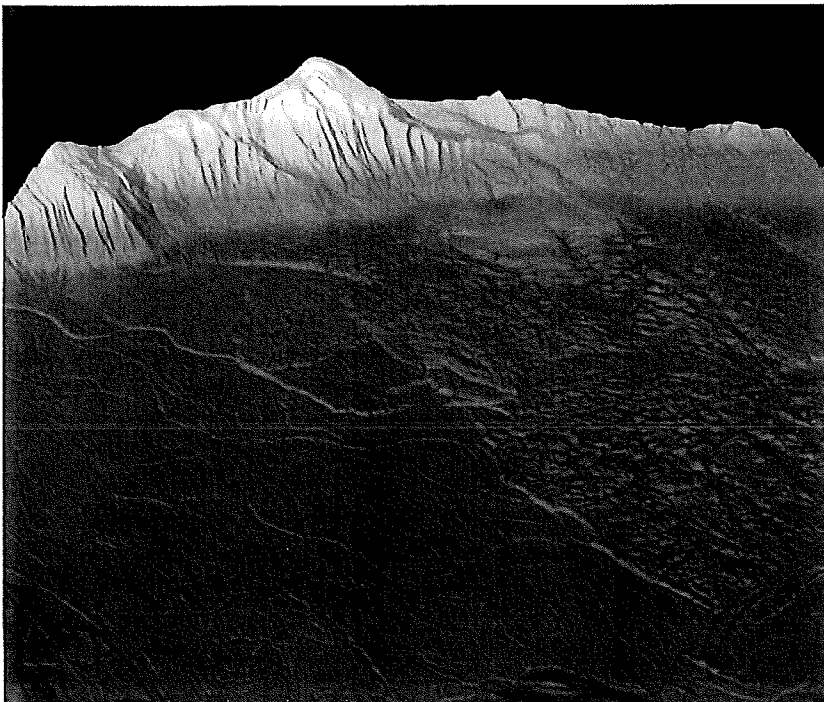
### ***Accuracy Assessment***

To assess absolute accuracy, we will use data from the RTK ground survey conducted in the study area. Absolute accuracy assessments will compare known RTK ground survey points to derived LiDAR points. Accuracies are described as the mean and standard deviation ( $\sigma$ ) of divergence from RTK ground survey point coordinates. These statistics assume the error for x, y, and z are normally distributed, thus we also consider the skew and kurtosis of distributions when evaluating error statistics. All accuracy statistics ( $RMSE_z$ ,  $Accuracy_z - 1.96\sigma$ , skewness/distribution, and percentile deviations) will be reported in the deliverables. Statements of statistical accuracy will apply to fixed terrestrial surfaces only.

## Project Specifications

The specifications for LiDAR data for this project area will mirror those for previous project acquisitions for the Nooksack Tribe (also PSLC standard).

LiDAR		
Scan Angle	$\leq 30^\circ$ (+/-15° from Nadir)	
Returns Collected Per Laser Pulse	Up to 4	
Multi-Swath Pulse Density	$\geq 8$ pulses/m <sup>2</sup>	
Intensity Range	1-255	
Swath Overlap	50% side-lap (100% overlap)	
GPS PDOP During Acquisition	$\leq 3.5$	
GPS Satellite Constellation	$\geq 6$	
Maximum GPS Baseline	13 nautical miles	
Accuracy <sub>z</sub> (1.96 $\sigma$ ), slope <20°	$\leq 30$ cm	
RMSE <sub>z</sub> , slope <20°	Vertical	$\leq 15$ cm
	Horizontal	$\leq 30$ cm
Projection & Coordinate System		
Projection and Units	Washington State Plane FIPS 4601	
Units	U.S. Survey Feet	
Horizontal Datum	NAD83	
Vertical Datum	NAVD88 Geoid 03	



3D view looking east at the Mainstem Nooksack River - bare earth 1-m resolution DEM derived from ground points.

### ***Area of Interest - Middle Fork Nooksack River, WA***

The new area of interest for this cost proposal includes portions of the Middle Fork and North Fork Nooksack Rivers, and Rocky Creek (Figure 1). The area borders the northeast edge of the 2008 project area, in northern WA. The AOI will be buffered by 100 meters to ensure complete coverage and adequate point densities around study area boundaries.



Figure 1. Area of interest for LiDAR acquisition, Middle Fork Nooksack River, Washington.

### ***Acquisition Schedule***

The acquisition is anticipated during leaf-off and low flow conditions within the early leaf-off transition season of 2010. Efforts will be taken to collect data before significant snow events (late Sept-October).

## Deliverables

LiDAR deliverables will mirror those provided to the Nooksack Tribe for prior deliveries, unless otherwise specified. These are as follows:

<b>Point Data:</b>	<ul style="list-style-type: none"> <li>• All laser returns (LAS v. 1.1 format; 1/100<sup>th</sup> USGS quad delineation)</li> <li>• All laser returns (ASCII text format; 1/100<sup>th</sup> USGS quad delineation)</li> <li>• Ground classified points (ASCII text format; 1/100<sup>th</sup> USGS quad delineation)</li> </ul>
<b>Vector Data:</b>	<ul style="list-style-type: none"> <li>• Total Area Flown (shapefile format)</li> <li>• SBET Trajectories (ASCII text format)</li> </ul>
<b>Raster Data:</b>	<ul style="list-style-type: none"> <li>• Elevation models (3-ft resolution)             <ul style="list-style-type: none"> <li>• Bare Earth Model (ESRI GRID format; 1/4<sup>th</sup> USGS quad delineation)</li> <li>• Highest Hit Model (ESRI GRID format; 1/4<sup>th</sup> USGS quad delineation)</li> </ul> </li> <li>• Intensity images (GeoTIFF format, 1.5-ft resolution, 1/100<sup>th</sup> USGS quad delineation)</li> </ul>
<b>Data Report:</b>	Full report containing introduction, methodology, and accuracy

## Cost Proposal

Costs are independent of the PSLC negotiated rate structure as the size of the study area is below the minimum PSLC project acreage size (32,000 acres). The project may still be contracted through the PSLC if it is advantageous for the Nooksack Tribe to do so.

Middle Fork Nooksack River Amended Area (12,847 acres)	Total Cost
LiDAR Deliverables *	\$22,909

\* Cost does not include an additional administrative fee (10% or more) for QA/QC provided by Kitsap County/Puget Sound LiDAR Consortium.

## Company Profile



Watershed Sciences, Inc. is an Oregon-based company that specializes in airborne remote sensing and analysis, including light detection and ranging (LiDAR), thermal infrared, true color digital imagery, ground surveying, and water quality modeling. Our staff numbers over 40 and comprises a talented group of geographers, engineers, foresters, hydrologists, biologists, and landscape ecologists specializing in applied GIS and remote sensing applications with a focus on LiDAR data acquisition and analysis. The company owners, Russell Faux and Matthew Boyd, have a combined 26 years of professional experience.



We have collected LiDAR data throughout North America, but have a breadth of experience in the West and are familiar with the challenges of flight planning and ground surveying across the diverse terrain of this region. Our aircraft and LiDAR sensors are based in Oregon, allowing for flexible and timely mobilizations throughout the western states.

We operate the most advanced LiDAR systems available on the market, featuring high pulse rates, multiple returns per pulse, and improved accuracies. We focus on producing research quality data with a focus on excellent geodetic control and ground verification. Common features of all of our acquisitions are dense spot-spacing and high point-to-point (e.g. internal consistency) as well as absolute accuracies. Watershed Sciences has the capacity to complete large projects (over 1-million acres) yet is small enough to allow clients to work directly and personally with our technical staff.

## Contact Information

Watershed Sciences has two locations in Oregon. The Corvallis office serves as the business headquarters and is the base for spectral processing and select LiDAR processing. The Portland office is our primary facility for LiDAR data processing and is proximate to Federal and State agencies as well as a large number of private clients. For any questions about the company or this proposal, please feel free to contact us at:

Location	Address	Phone	Fax	Contact / Email
Corvallis	517 SW 2 <sup>nd</sup> Street, Suite 400 Corvallis, OR 97333	(541) 752-1204	(541) 752-3770	Russell Faux, President <a href="mailto:faux@watershedsciences.com">faux@watershedsciences.com</a>
Portland	529 SW 3 <sup>rd</sup> Ave., Suite 300 Portland, OR 97204	(971) 223-5152	(503) 546-6801	Matthew Boyd, LiDAR Team Leader <a href="mailto:mboyd@watershedsciences.com">mboyd@watershedsciences.com</a>

