

ATTACHMENT B

KITSAP COUNTY
DEPT. OF EMERGENCY MANAGEMENT
 911 Carver Street
 Bremerton, WA 98312
 (360) 307-5871

INTERLOCAL COOPERATIVE AGREEMENT TO PURCHASE LIDAR DATA
FOR THE CITY OF REDMOND PROJECT
 KC-080-2014

THIS AGREEMENT is between City of Redmond and, and Kitsap County, a municipal corporation, all in the State of Washington.

WITNESSETH:

WHEREAS, The 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.

COOPERATIVE PURCHASING AGREEMENT

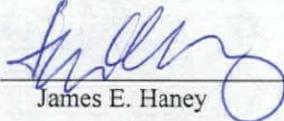
5. RIGHT TO CONTRACT INDEPENDENT ACTION PRESERVED. Each party reserves the right to contract independently for the acquisition of goods or services and or disposal of any property without notice to the other party and shall not bind or otherwise obligate the other party to participate in the activity.
6. COMPLIANCE WITH LEGAL REOUIREMENTS. 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.
11. 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. (Kitsap County 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 the City of Redmond, Washington to obtain the data described in Exhibit B from Watershed Sciences, Inc. The total cost to the City of Redmond is also set out in Exhibits A and B and will not exceed \$24,360.00. Kitsap County will obtain this data from Watershed Sciences, Inc. under its contract with Watershed Sciences.

COOPERATIVE PURCHASING AGREEMENT

City of Redmond, Washington

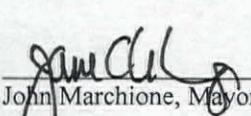
APPROVED AS TO FORM ONLY

City of Redmond, Washington
Attorney:

By: 
James E. Haney

Date: 3/18/14

City of Redmond, Washington

 3/18/14
John Marchione, Mayor Date

JANE CHRISTENSEN, Deputy City Administrator
Printed Name and Title

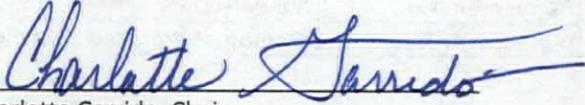
 3/18/14
Michelle M. Hart, City Clerk Date

Printed Name and Title

IN WITNESS WHEREOF, this agreement is signed this

14 day of APRIL, 2014

Board of County Commissioners
Kitsap County, Washington


Charlotte Garrido, Chair


Robert Gelder, Commissioner

NOT PRESENT
Linda Streissguth, Commissioner

Attest:

Dana Daniels, Clerk of the Board

COOPERATIVE PURCHASING AGREEMENT

**Exhibit A
Puget Sound LiDAR Consortium Rate Structure**

Provider:	Kitsap County
Agreement No.:	KC-244-12
Agreement Title:	Remote Watershed LiDAR Services

Area Extent	Price per Acre	Price per Square Mile	Contours	Intensity Images	Gain-normalized Intensities
50 to 100 sq. miles (32,000 to 64,000 acres)	\$1.42	\$909	\$0.142	\$0	\$0.080
100 to 150 sq. miles (64,000 to 96,000 acres)	\$1.11	\$710	\$0.111	\$0	\$0.060
150 to 200 sq. miles (96,000 to 128,000 acres)	\$0.94	\$602	\$0.094	\$0	\$0.050
200 to 250 sq. miles (128,000 to 160,000 ac)	\$0.84	\$538	\$0.084	\$0	\$0.040
Greater than 250 sq. mi (Greater than 160,000 ac)	\$0.78	\$499	\$0.078	\$0	\$0.035

Consortium adds a 14% overhead to the total cost. For the City of Redmond, Wa. the consortium costs will be computed at the \$.78 per acre rate or Total acres X \$.78 X 14%

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February 10, 2014

WSI Corvallis
517 SW 2nd St., Suite 400
Corvallis, Oregon 97333
541.752.1204

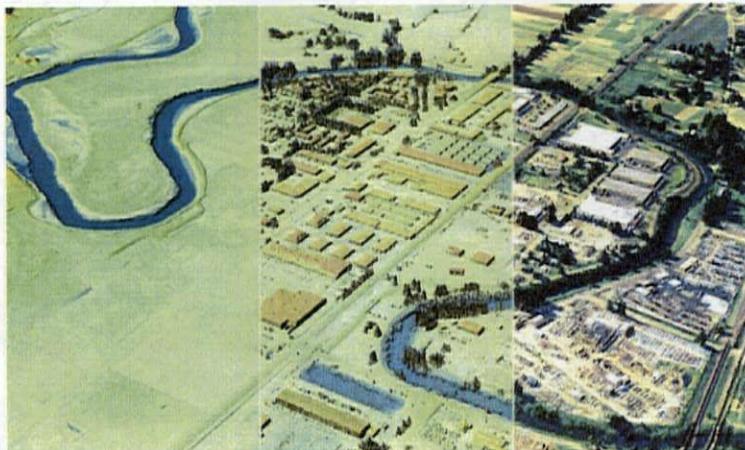
www.wsidata.com

Andy Rheume
City of Redmond Public Works
Redmond City Hall
15670 NE 85th St.
Redmond, WA 98052
425.556.2741
ajrheume@redmond.gov

RE: LiDAR Data Acquisition Cost Proposal – City of Redmond, WA

Dear Mr. Rheume,

Watershed Sciences, Inc. (WSI, a Quantum Spatial Company) appreciates the opportunity to present to the **City of Redmond** a *revised* cost proposal for acquiring and processing high-resolution (> 8 pulses/m²) LiDAR data for the City of Redmond project area. The following is a brief synopsis of our services, specifications, and associated costs for the area of interest. Price assumes acquisition during collection of PSLC Cedar River Watershed project for cost savings, and delivery of products as an incorporated add-on to the Cedar River Watershed contract. *This revised quote reflects new costs for expanded area.*



Paneled view of bare earth (L), highest hit (middle) and point cloud colored by 2013 NAIP imagery (R), Kent, WA.

Services

Airborne LiDAR

WSI will collect LiDAR data using a Leica LiDAR system to produce a highly accurate, high resolution (≥ 8 pulses/m²) LiDAR dataset with no gaps and ample buffers (at least 100m) around project boundaries. Data will be collected at a $\leq 30^\circ$ field of view ($\pm 15^\circ$ from nadir), with at least 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). All overlapping flight lines will be flown in opposing directions to maximize detection of swath to swath inconsistencies used to resolve system misalignments. Our GPS receivers and LiDAR systems are GNSS-capable ensuring low PDOP values and adequate satellite constellations throughout the mission. GPS quality is predicted before the flight and checked during post processing to ensure that positional accuracy exceeds specifications.

Using a combination of automated and manual techniques that are tailored to the particular land cover and terrain of the study area, LiDAR processing will include kinematic corrections, calculation of laser point position, relative accuracy testing and calibrations, classification of ground and non-ground points, assessments of statistical

LiDAR Specifications Summary	
Multi-Swath Pulse Density	≥ 8 pulses/m ²
Scan Angle	$\leq 30^\circ$ (+/-15° from Nadir)
Returns Collected Per Laser Pulse	Up to 4
Intensity Range	1-255
Swath Overlap	50% side-lap (100% overlap)
GPS PDOP During Acquisition	≤ 3.0
GPS Satellite Constellation	≥ 6
Maximum GPS Baseline	13 nautical miles
Accuracy _z (1.96 σ), slope <20°	≤ 20 cm
Vertical Accuracy (σ), slope <20°	≤ 15 cm
Horizontal Accuracy (σ)	≤ 30 cm

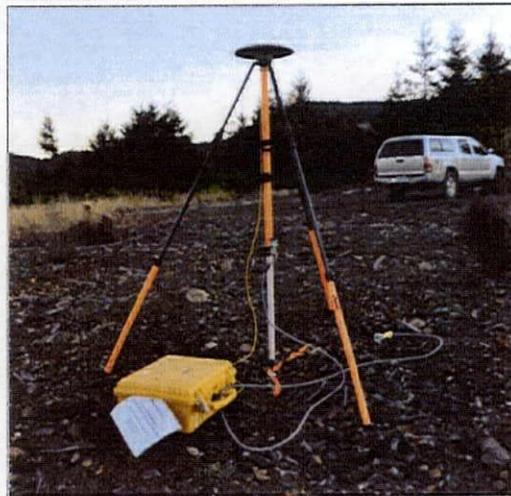
absolute accuracy, and creation of ground surface models.

Absolute accuracy assessments will compare known RTK ground survey points to derived LiDAR points. Accuracies are described as the mean and standard deviation (σ) of divergence from RTK ground survey point coordinates. All accuracy statistics (RMSE_z, Accuracy_z - 1.96 σ , skewness/distribution, and percentile deviations) will be reported in the final report. Statements of statistical accuracy will apply to fixed terrestrial surfaces only.

Survey Control

Simultaneous to the LiDAR data collection mission, WSI will conduct a static (1 Hz recording frequency) survey of the horizontal and vertical positions of two or more survey control dual-frequency DGPS base stations established at monuments with known coordinates. Maximum baseline lengths between control points and the aircraft GPS do not exceed 24 kilometers (13 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) ground check 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 of well-distributed RTK ground survey points on open, bare earth surfaces with level slope.



Deliverables

Deliverables will match standard for Puget Sound LiDAR Consortium:

LiDAR	
Report of Survey	Text report that describes survey methods; results; vendor's accuracy assessments, including internal consistency and absolute accuracy; and metadata <i>.pdf, .doc, or .odt format</i>
Aircraft trajectories (SBET files)	Aircraft position (easting, northing, elevation) and attitude (heading, pitch, roll) and GPS time recorded at regular intervals of 1 second or less. May include additional attributes. <i>ASCII text format</i>
All-return point cloud	List of all valid returns. For each return: GPS week, GPS second, easting, northing, elevation, intensity, return#, return classification. May include additional attributes. No duplicate entries. <i>ASCII text and LAS version 1.2 format</i> <i>1/100th USGS 7.5-minute quadrangle (0.75 minute by 0.75 minute) tiles</i>
Ground point list	List of X,Y,Z coordinates of all identified ground points. <i>ASCII text.</i> <i>1/100th USGS 7.5-minute quadrangle (0.75 minute by 0.75 minute) tiles</i>
Ground surface model	Raster of ground surface, interpolated via triangulated irregular network from identified ground points. No unavoidable point misclassification <i>ESRI floating point grid, 3 ft cell size, snapped to (0,0), 1/4th USGS 7.5-minute quadrangle (0.375 minute by 0.375 minute) tiles</i>
First-return (highest-hit) surface model	Raster of first-return surface, cell heights are highest recorded value within that cell, voids may be filled with ground surface model <i>ESRI floating point grid, 3 ft cell size, snapped to (0,0), 1/4th USGS 7.5-minute quadrangle (0.375 minute by 0.375 minute) tiles</i>
Surface models shall have no tiling artifacts and no gaps at tile boundaries. Areas outside survey boundary shall be coded as NoData. Internal voids (e.g., open water areas, shadowed areas in first-return surface) may be coded as NoData.	
Intensity image	<i>GeoTIFF, 1.5. ft pixel size, 1/100th USGS 7.5-minute quadrangle (0.75 minute by 0.75 minute) tiles</i>
Files shall conform to a consistent naming scheme. Files shall have consistent internal formats.	

Coordinate System	
Projection	Washington State Plane North FIPS 4601 U.S. Survey Feet
Horizontal Datum	NAD83 (1991 HARN)
Vertical Datum	NAVD88 Geoid 03

Area of Interest – City of Redmond, WA

The expanded area of interest (AOI) for this cost proposal now includes 18,767 acres within the City of Redmond in western Washington (Figure 1). The project area that will be flown includes 597 acres of overlap with the prior-collected Cedar River shape in order to facilitate matching the datasets collected on different mission dates. The AOI will be buffered by 100 meters to ensure complete coverage and adequate point densities around study area boundaries.



Figure 1. City of Redmond area of interest for LiDAR acquisition.

Schedule

LiDAR data will be targeted for acquisition during the 2014 leaf off season (mid-February – mid April) in coordination with the remaining Cedar River Watershed collection (and/or other projects in vicinity). All data are delivered to PSLC within 60-90 days of acquisition.

Cost Proposal

The following table presents LiDAR acquisition and processing costs for the project area portrayed in Figure 1, assuming above specifications and deliverables. Cost savings include defrayed mobilization to project area, and product deliverables rolled into processing workflow for Cedar River. All data will be delivered to PSLC as part of the Cedar River Watershed project contract.

City of Redmond, WA (18,767 acres)	Total Cost	Per Acre Cost
LiDAR Acquisition and Processing*	\$22,310	\$1.19

*does not include additional surcharge for Kitsap County administrative fee.