Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT/PRIVACY PROGRAM

July 9, 2021

In reply refer to: FOIA #BPA-2021-00503-F

Lauren Rellinger
Sr. Business Development Coordinator
MacKay Sposito
1325 SE Tech Center Drive, Suite 140
Vancouver, WA 98683
Email lrellinger@mackaysposito.com

Dear Ms. Rellinger,

This communication is the Bonneville Power Administration's (BPA) final response to your request for agency records made under the Freedom of Information Act, 5 U.S.C. § 552 (FOIA). Your request was received on March 24, 2021, and formally acknowledged on April 15, 2021.

Request
"…all submittals to RFO #3553 for Professional Survey and Mapping Services from 2016."

Clarification
Following email exchanges with agency FOIA office personnel, on May 5, 2021, you confirmed that BPA would exclude MacKay Sposito's submittals for RFO #3553 from the agency's response to your FOIA request.

Response
BPA searched for and gathered records responsive to your FOIA request from knowledgeable Energy Infrastructure Delivery Team personnel in the agency's Contracts & Strategic Sourcing-Supply Chain Services office. Those records comprised the submittals for successful and unsuccessful submitters. The unsuccessful submitters were Westlake Consultants, Ruen-Yeager & Associates, Parametrix, Columbia Surveys, Forsgren Associates, Otak, WHPacific, Minister-Glaeser Surveying. The successful submitters were MacKay Sposito (see again, the clarification above), DOWL fka OBEC Consulting Engineers, Ruen Yeager & Associates (as a subcontractor to DOWL for support the Eastern portion of BPA's service area), David Evans & Associates, and DJ & A. BPA is required by the FOIA, at 5 U.S.C. § 552(b)(3) (Exemption 3), to withhold the unsuccessful bidder submittal records. (A more detailed explanation of the withholding of the unsuccessful submitter records is provided below.) In compliance with the FOIA, BPA collected the 376 pages of the successful submitters' records. Those successful submitter records

accompany this communication, with minor redactions applied to 25 pages, made under 5 U.S.C. § 552(b)(6) (Exemption 6). (A more detailed explanation of the applied exemptions also follows.)

Explanation of Withholdings and Exemptions
The FOIA generally requires the release of all agency records upon request. However, the FOIA permits or requires withholding certain limited information that falls under one or more of nine statutory exemptions (5 U.S.C. §§ 552(b)(1-9)). Further, section (b) of the FOIA, which contains the FOIA's nine statutory exemptions, also directs agencies to publicly release any reasonably segregable, non-exempt information that is contained in those records.

Exemption 3
BPA is required by Exemption 3 and 41 U.S.C. § 4702 to withhold the unsuccessful bidder submittal records, but, under certain circumstances, not the awarded submittal records. 41 U.S.C. § 4702 exists as a prohibition on the public release of proposal-submittal information that otherwise might be responsive to a FOIA request. That is, BPA is required by Exemption 3 and 41 U.S.C. § 4702 to withhold both unsuccessful bidder submittal records, and the awarded submittal records, if the awarded bidders' submittal information were not incorporated into the awarded contract(s). BPA here relies on Exemption 3 and 41 U.S.C. § 4702 to withhold the unsuccessful submitter records. The successful submitter proposals were incorporated into the awarded contracts and so are not subject to Exemption 3 and are being released to you.

Exemption 6
Exemption 6 serves to protect Personally Identifiable Information (PII) contained in agency records when no overriding public interest in the information exists. BPA does not find an overriding public interest in a release of the information redacted under Exemption 6—specifically, signatures found on the accompanying records. This information sheds no light on the executive functions of the agency and BPA finds no overriding pubic interest in its release. BPA cannot waive these redactions, as the protections afforded by Exemption 6 belong to individuals and not to the agency.

Lastly, as required by 5 U.S.C. § 552(a)(8)(A), information has been withheld only in instances where, (1) disclosure is prohibited by statute, or (2) BPA foresees that disclosure would harm an interest protected by the exemption cited for the record. When full disclosure of a record is not possible, the FOIA statute further requires that BPA take reasonable steps to segregate and release nonexempt information. The agency has determined that in certain instances partial disclosure is possible, and has accordingly segregated the records into exempt and non-exempt portions.

Fees
There are no fees associated with processing your FOIA request.

Certification
Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the records search and exemption determinations and the records release described above. Your FOIA request BPA-2021-00503-F is now closed with all responsive agency records provided.

Appeal
The adequacy of the search may be appealed within 90 calendar days from your receipt of this letter pursuant to 10 C.F.R. § 1004.8. Appeals should be addressed to:

Director, Office of Hearings and Appeals
HG-1, L'Enfant Plaza
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-1615

The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal by e-mail to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line. (The Office of Hearings and Appeals prefers to receive appeals by email.) The appeal must contain all the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

You may contact BPA's FOIA Public Liaison, Jason Taylor, at 503-230-3537, jetaylor@bpa.gov, or the address on this letter header for any further assistance and to discuss any aspect of your request. Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

Office of Government Information Services
National Archives and Records Administration
8601 Adelphi Road-OGIS
College Park, Maryland 20740-6001
E-mail: ogis@nara.gov
Phone: 202-741-5770
Toll-free: 1-877-684-6448
Fax: 202-741-5769

Questions about this communication may be directed to the agency's FOIA Public Liaison, Jason Taylor, at jetaylor@bpa.gov or at 503-230-3537. Questions may also be directed to James King, CorSource Technology Group LLC, at jjking@bpa.gov or at 503-230-7621.

Sincerely,



Candice D. Palen
Freedom of Information/Privacy Act Officer

Responsive agency records accompany this communication.

Response to RFO No. 3553

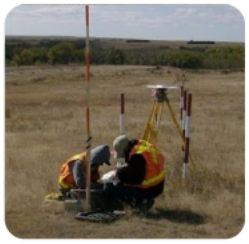
Professional Survey and Mapping Services

For Bonneville Power Administration

BONNEVILLE POWER ADMINISTRATION









1 | Business/Pricing Proposal







DAVID EVANS AND ASSOCIATES INC.

January 18, 2016

Business/Pricing Proposal

to Perform

Survey and Mapping Services

RFO No. 3553





Presented to

Bonneville Power Administration
P.O. Box 61409 / NSSV-440-2
Vancouver, Washington 98666-1409



Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201
Contact: Mr. Kris Westersund, PE, PLS, CWRE
Phone: (503) 223-6663
Email: krw@deainc.com



January 18, 2016

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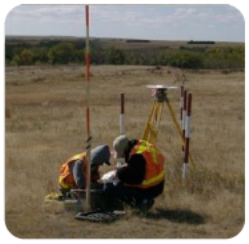



(A) | Representations and Certifications





ATTACHMENT 2 -- REPRESENTATIONS AND CERTIFICATIONS

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TAXPAYER IDENTIFICATION NUMBER (4-1)
(DEC 98)(BPI 4.1.2.1)

NOTE:
(1) Taxpayer Identification Number (TIN) reporting does not apply to a Federal agency, a foreign government or a foreign business not engaged in business or trade or without an agent capable of receiving payment within the United States.
(2) The TIN for BPA is 93-0334712.

All offerors, other than noted above, are required to submit its Taxpayer Identification Number requested below in order to comply with the Department of Treasury payment processing requirements of 31 U.S.C. 3332 and 7701, and the reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service. If the resulting contract is subject to those requirements, the failure or refusal by the offeror to furnish the information may result in a suspension of payment and a thirty-one (31) percent reduction of payments otherwise due under the contract.

Taxpayer Identification Number _____.

TYPE OF BUSINESS ORGANIZATION (11-1)
(SEP 02)(BPI 11.10.2.1)

The offeror, by checking the applicable box, represents that-

(a) It operates as / / a corporation incorporated under the laws of the State of _____, / / an individual, / / a partnership, / / a nonprofit organization, or / / a joint venture; or

(b) It is a / / local, / / state, / / federally recognized Indian tribe, or / / other governmental entity, (*describe* _____); or

(c) If the offeror is a foreign entity, it operates as / / an individual, / / a partnership, / / a nonprofit organization, / / a joint venture, or / / a corporation, registered for business in _____ (country) and / / does / / does not have an office or fiscal paying agent in the United States; or

(d) It is / / a type of business organization not otherwise listed above (*describe* _____).

SUPPLIER DIVERSITY AWARD REPRESENTATION (8-1)
(OCT 13)(BPI 8.1.3)

(a) CO Fill-in:

NAICS CODE	Size Standard in Millions of Dollars **OR** Size Standards in Number of Employees
541370	**$15.0 M**

(b) The offeror represents that:

(1) it is /__/, is not /__/ a small business concern.

(2) it is /__/, is not /__/ a disadvantaged small business concern (this includes Native American owned small business, 8-A Certified or Hub-zone and any other disadvantaged small business concerns).

(3) it is /__/, is not /__/ a women-owned small business concern.

(4) it is /__/, is not /__/ a veteran-owned small business concern.

(5) it is /__/, is not /__/ a disabled veteran-owned small business concern.

BUY AMERICAN CERTIFICATE (9-1)
(OCT 93)(BPI 9.1.6)

(a) The Offeror certifies that each end product, except the end products listed below, is a domestic end product (as defined in the clause entitled "Buy American Act - Supplies"), and that components of unknown origin have been considered to have been mined, produced, or manufactured outside the United States.

EXCLUDED END PRODUCTS AND COUNTRY OF ORIGIN
(List as necessary)

_____

_____

_____

(b) An Offeror who proposes to furnish domestic source end products containing components of foreign origin the cost of which exceeds 15 percent of the offered price, shall furnish in the spaces below a complete list of components of foreign origin in sufficient detail to clearly identify each.

FOREIGN COMPONENTS AND POINT OF ORIGIN

_____

_____

_____

The Offeror represents that the total cost of the above components of foreign origin, including applicable duty and transportation costs, constitutes ____ percent of the cost of all components to be incorporated in the end products being furnished. The Offeror agrees to furnish, for the exclusive use of BPA, such additional information as the Contracting Officer may request in order to verify the foregoing in evaluating the offer.

The Offeror agrees that no components of foreign origin, other than those listed above, will be incorporated in the end products being furnished without written approval of the Contracting Officer.

(c) Where an Offeror fails to complete the representation of foreign content provision above, and in the absence of any previous experience with the offeror or information to the contrary, BPA assumes that domestic firms intend to furnish domestic end products and that foreign firms intend to furnish products of foreign origin.

OFFEROR REPRESENTATIONS AND CERTIFICATIONS – PROHIBITED FOREIGN TRANSACTIONS (9-9) (OCT 13)(BPI 9.3.2.1)

(a) The representations in (b)(1) and certifications in (b)(2) and b(3) do not apply if the procurement is covered by a trade agreement as defined in BPI 9.4.2 and the offeror has certified that all the offered products are designated country end products or designated country material.

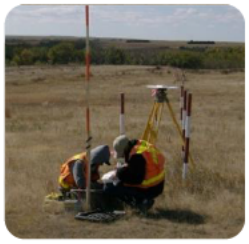
(b) By submission of its offer, the offeror:

(1) Represents, to the best of its knowledge that the offeror does not export any sensitive technology as defined in Pub. L. 111-195 Section 106 to the government of Iran or any entities or individuals owned or controlled by, or acting on the behalf of the government of Iran.

(2) Certifies that the offeror, or any person owned of controlled by the offeror, does not engage in activities that may result in sanctions under Section 5 of the Iran Sanctions Act (Pub. L. 111-195 et seq.).

(3) Certifies that the offeror, and any person owned or controlled by the offeror, does not knowingly engage in any transaction that exceeds $3,000 with Iran's Revolutionary Guard Corps or any of its officials, agents, or affiliates, the property and interests in property of which are blocked pursuant to the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.)

(4) Certifies that the offeror does not conduct any restricted business operations in Sudan as defined in in the Sudan Accountability and Divestment Act of 2007 (Pub. L. 110-174).





(B) | Business Proposal Excel Workbook





Business/Pricing Proposal

David Evans and Associates, Inc. (DEA) is pleased to present our price proposal in the provided Excel Business Workbook.

Please note that DEA does not charge a premium for overtime. Not only does this save in invoiced labor, but it also provides BPA the flexibility to ask us to work longer days. Field crews can more readily stay to finish a task, reducing return trips, and saving mileage and per diem charges. We can also meet tight schedules without switching to a higher labor rate.

DEA proposes to continue charging for these expenses:

- Per diem and mileage at General Services Administration (GSA) rates
- Reproduction (printing) at cost
- Non-standard consumable supplies, such as concrete for setting monuments
- Outside services, including delivery, utility locates, and traffic control, at cost
- Mobile and stationary scanners at rates to be determined
- Boats and hydrographic survey at rates to be determined

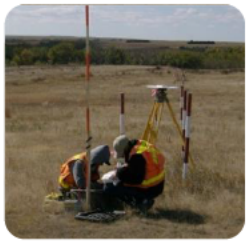
All-Terrain Vehicles, and standard survey equipment and supplies are included in our overhead rate and there are no additional charges for these items.

DEA is currently providing Survey and Mapping Services to BPA. Our staff will not need training from the BPA survey and mapping team to get up to speed, thus saving BPA time and money.

BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (___%)**	**OT Profit (___%)**	**OT Contract Billing Rate**
Survey Manager	$ 60.00	$ 105.91	$ 16.59	$ 182.50	N/A	N/A	N/A	N/A
Project Surveyor	$ 42.00	$ 74.14	$ 11.61	$ 127.75	N/A	N/A	N/A	N/A
Survey Party Chief	$ 31.00	$ 54.72	$ 8.57	$ 94.29	N/A	N/A	N/A	N/A
Survey Technician	$ 25.50	$ 45.01	$ 7.05	$ 77.56	N/A	N/A	N/A	N/A
Survey Aide	$ 21.50	$ 37.95	$ 5.95	$ 65.40	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 32.00	$ 56.49	$ 8.85	$ 97.34	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 26.00	$ 45.90	$ 7.19	$ 79.09	N/A	N/A	N/A	N/A
Cartographic Technician	$ 29.00	$ 51.19	$ 8.02	$ 88.21	N/A	N/A	N/A	N/A
Clerical/Administration	$ 26.00	$ 45.90	$ 7.19	$ 79.09	N/A	N/A	N/A	N/A
GIS Technician	$ 29.00	$ 51.19	$ 8.02	$ 88.21	N/A	N/A	N/A	N/A
GIS Analyst	$ 43.00	$ 75.90	$ 11.89	$ 130.79	N/A	N/A	N/A	N/A
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (___%)**	**OT Profit (___%)**	**OT Contract Billing Rate**
Survey Manager	$ 61.80	$ 109.09	$ 17.09	$ 187.98	N/A	N/A	N/A	N/A
Project Surveyor	$ 43.26	$ 76.36	$ 11.96	$ 131.58	N/A	N/A	N/A	N/A
Survey Party Chief	$ 31.93	$ 56.36	$ 8.83	$ 97.12	N/A	N/A	N/A	N/A
Survey Technician	$ 26.27	$ 46.37	$ 7.26	$ 79.90	N/A	N/A	N/A	N/A
Survey Aide	$ 22.15	$ 39.10	$ 6.13	$ 67.38	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 32.96	$ 58.18	$ 9.11	$ 100.25	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 26.78	$ 47.27	$ 7.41	$ 81.46	N/A	N/A	N/A	N/A
Cartographic Technician	$ 29.87	$ 52.73	$ 8.26	$ 90.86	N/A	N/A	N/A	N/A
Clerical/Administration	$ 26.78	$ 47.27	$ 7.41	$ 81.46	N/A	N/A	N/A	N/A
GIS Technician	$ 29.87	$ 52.73	$ 8.26	$ 90.86	N/A	N/A	N/A	N/A
GIS Analyst	$ 44.29	$ 78.18	$ 12.25	$ 134.72	N/A	N/A	N/A	N/A
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (___%)**	**OT Profit (___%)**	**OT Contract Billing Rate**
Survey Manager	$ 63.65	$ 112.35	$ 17.60	$ 193.60	N/A	N/A	N/A	N/A
Project Surveyor	$ 44.56	$ 78.66	$ 12.32	$ 135.54	N/A	N/A	N/A	N/A
Survey Party Chief	$ 32.89	$ 58.06	$ 9.10	$ 100.05	N/A	N/A	N/A	N/A
Survey Technician	$ 27.06	$ 47.77	$ 7.48	$ 82.31	N/A	N/A	N/A	N/A
Survey Aide	$ 22.81	$ 40.26	$ 6.31	$ 69.38	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 33.95	$ 59.93	$ 9.39	$ 103.27	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 27.58	$ 48.68	$ 7.63	$ 83.89	N/A	N/A	N/A	N/A
Cartographic Technician	$ 30.77	$ 54.32	$ 8.51	$ 93.60	N/A	N/A	N/A	N/A
Clerical/Administration	$ 27.58	$ 48.68	$ 7.63	$ 83.89	N/A	N/A	N/A	N/A
GIS Technician	$ 30.77	$ 54.32	$ 8.51	$ 93.60	N/A	N/A	N/A	N/A
GIS Analyst	$ 45.62	$ 80.53	$ 12.62	$ 138.77	N/A	N/A	N/A	N/A
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (___%)**	**OT Profit (___%)**	**OT Contract Billing Rate**
Survey Manager	$ 65.56	$ 115.73	$ 18.13	$ 199.42	N/A	N/A	N/A	N/A
Project Surveyor	$ 45.90	$ 81.02	$ 12.69	$ 139.61	N/A	N/A	N/A	N/A
Survey Party Chief	$ 33.88	$ 59.80	$ 9.37	$ 103.05	N/A	N/A	N/A	N/A
Survey Technician	$ 27.87	$ 49.20	$ 7.71	$ 84.78	N/A	N/A	N/A	N/A
Survey Aide	$ 23.49	$ 41.46	$ 6.50	$ 71.45	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 34.97	$ 61.73	$ 9.67	$ 106.37	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 28.41	$ 50.15	$ 7.86	$ 86.42	N/A	N/A	N/A	N/A
Cartographic Technician	$ 31.69	$ 55.94	$ 8.76	$ 96.39	N/A	N/A	N/A	N/A
Clerical/Administration	$ 28.41	$ 50.15	$ 7.86	$ 86.42	N/A	N/A	N/A	N/A
GIS Technician	$ 31.69	$ 55.94	$ 8.76	$ 96.39	N/A	N/A	N/A	N/A
GIS Analyst	$ 46.99	$ 82.95	$ 12.99	$ 142.93	N/A	N/A	N/A	N/A
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (___%)**	**OT Profit (___%)**	**OT Contract Billing Rate**
Survey Manager	$ 67.53	$ 119.20	$ 18.67	$ 205.40	N/A	N/A	N/A	N/A
Project Surveyor	$ 47.28	$ 83.46	$ 13.07	$ 143.81	N/A	N/A	N/A	N/A
Survey Party Chief	$ 34.90	$ 61.61	$ 9.65	$ 106.16	N/A	N/A	N/A	N/A
Survey Technician	$ 28.71	$ 50.68	$ 7.94	$ 87.33	N/A	N/A	N/A	N/A
Survey Aide	$ 24.19	$ 42.70	$ 6.69	$ 73.58	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 36.02	$ 63.58	$ 9.96	$ 109.56	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 29.26	$ 51.65	$ 8.09	$ 89.00	N/A	N/A	N/A	N/A
Cartographic Technician	$ 32.64	$ 57.62	$ 9.03	$ 99.29	N/A	N/A	N/A	N/A
Clerical/Administration	$ 29.26	$ 51.65	$ 8.09	$ 89.00	N/A	N/A	N/A	N/A
GIS Technician	$ 32.64	$ 57.62	$ 9.03	$ 99.29	N/A	N/A	N/A	N/A
GIS Analyst	$ 48.40	$ 85.44	$ 13.38	$ 147.22	N/A	N/A	N/A	N/A

* Note: Overhead includes 0.34% FCCM (Facilities Capital Cost of Money)

LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017			
1	Survey Manager	$ 182.50	N/A
2	Project Surveyor	$ 127.75	N/A
3	Survey Party Chief	$ 94.29	N/A
4	Survey Technician	$ 77.56	N/A
5	Survey Aide	$ 65.40	N/A
6	Land Survey Office Technician	$ 97.34	N/A
7	Drafter/CAD Operator II	$ 79.09	N/A
8	Cartographic Technician	$ 88.21	N/A
9	Clerical/Administration	$ 79.09	N/A
10	GIS Technician	$ 88.21	N/A
11	GIS Analyst	$ 130.79	N/A
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018			
12	Survey Manager	$ 187.98	N/A
13	Project Surveyor	$ 131.58	N/A
14	Survey Party Chief	$ 97.12	N/A
15	Survey Technician	$ 79.90	N/A
16	Survey Aide	$ 67.38	N/A
17	Land Survey Office Technician	$ 100.25	N/A
18	Drafter/CAD Operator II	$ 81.46	N/A
19	Cartographic Technician	$ 90.86	N/A
20	Clerical/Administration	$ 81.46	N/A
21	GIS Technician	$ 90.86	N/A
22	GIS Analyst	$ 134.72	N/A
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019			
23	Survey Manager	$ 193.60	N/A
24	Project Surveyor	$ 135.54	N/A
25	Survey Party Chief	$ 100.05	N/A
26	Survey Technician	$ 82.31	N/A
24	Survey Aide	$ 69.38	N/A
28	Land Survey Office Technician	$ 103.27	N/A
29	Drafter/CAD Operator II	$ 83.89	N/A
30	Cartographic Technician	$ 93.60	N/A
31	Clerical/Administration	$ 83.89	N/A
32	GIS Technician	$ 93.60	N/A
33	GIS Analyst	$ 138.77	N/A
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020			
34	Survey Manager	$ 199.42	N/A
35	Project Surveyor	$ 139.61	N/A
36	Survey Party Chief	$ 103.05	N/A
37	Survey Technician	$ 84.78	N/A
38	Survey Aide	$ 71.45	N/A
39	Land Survey Office Technician	$ 106.37	N/A
40	Drafter/CAD Operator II	$ 86.42	N/A
41	Cartographic Technician	$ 96.39	N/A
42	Clerical/Administration	$ 86.42	N/A
43	GIS Technician	$ 96.39	N/A
44	GIS Analyst	$ 142.93	N/A
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021			
45	Survey Manager	$ 205.40	N/A
46	Project Surveyor	$ 143.81	N/A
47	Survey Party Chief	$ 106.16	N/A
48	Survey Technician	$ 87.33	N/A
49	Survey Aide	$ 73.58	N/A
50	Land Survey Office Technician	$ 109.56	N/A
51	Drafter/CAD Operator II	$ 89.00	N/A
52	Cartographic Technician	$ 99.29	N/A
53	Clerical/Administration	$ 89.00	N/A
54	GIS Technician	$ 99.29	N/A
55	GIS Analyst	$ 147.22	N/A





(C) | Contractual Information





Proposed Change to the Draft Contract

DEA has reviewed the draft contract provided in RFO 3553, Attachment 3. We have one concern.

On RFO 3553, Attachment 3, Page 29, Insurance (16-2), paragraph (a), the last sentence is:

> "The certificate(s) shall identify the Contractor and name BPA as the named insured as follows:"

The sentence may be replaced with (underlining for emphasis):

> "The certificate(s) shall identify the Contractor and name BPA as the <u>certificate holder</u> as follows:"

DEA cannot name BPA as a named insured for coverage that only extends to us. If the intent is for BPA to be an "additional insured" instead of a "named insured", the sentence may be replaced with the following:

> "The certificate(s) shall identify the Contractor and name BPA as <u>an additional insured, except for Workers Compensation and Professional Liability,</u> as follows:"



DAVID EVANS
AND ASSOCIATES INC.

www.deainc.com
800.721.1916

Social Connections



Response to RFO No. 3553

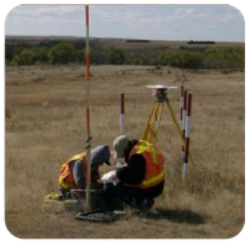
Professional Survey and Mapping Services

For Bonneville Power Administration

BONNEVILLE POWER ADMINISTRATION









2 | Technical/Management Proposal







DAVID EVANS AND ASSOCIATES INC.

January 18, 2016

Technical/Management Proposal

to Perform

Survey and Mapping Services

RFO No. 3553





Presented to

Bonneville Power Administration
P.O. Box 61409 / NSSV-440-2
Vancouver, Washington 98666-1409



Prepared by

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201
Contact: Mr. Kris Westersund, PE, PLS, CWRE
Phone: (503) 223-6663
Email: krw@deainc.com



January 18, 2016

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Section 2 | Technical Approach

Section 3 | Equipment

Section 4 | Location/Geographical Areas

Section 5 | Safety

Section 6 | Quality Assurance and Control

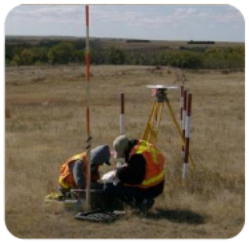
Section 7 | Past Performance

Section 8 | Subcontracting Plan











Section 1 | Professional Qualifications





2. Technical/Management Proposal

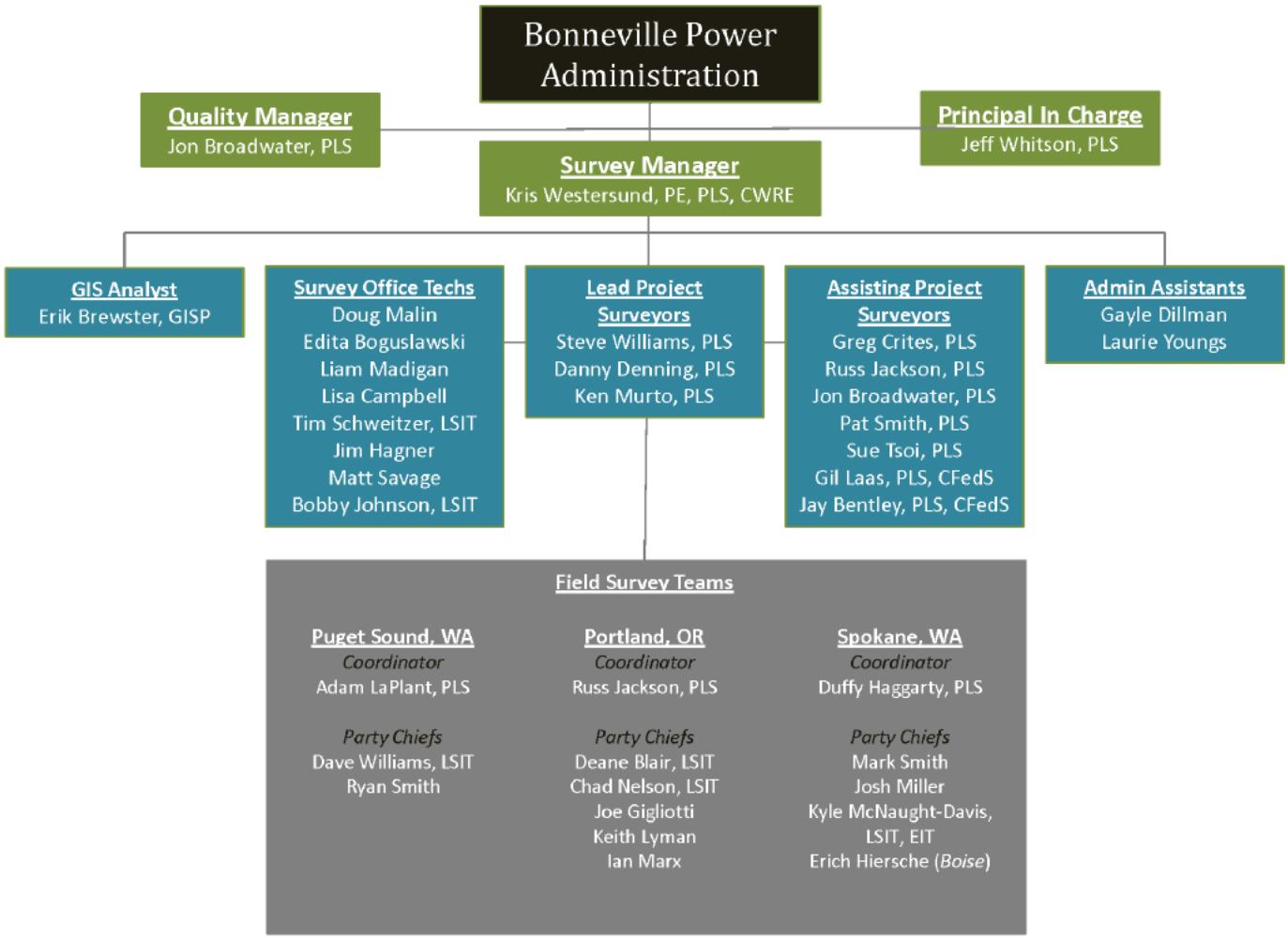
David Evans and Associates, Inc. (DEA) has been providing land surveying and mapping services to Bonneville Power Administration (BPA) since 1984. Since that time, DEA's surveying and geomatics team has performed services on hundreds of projects. This Technical/Management Proposal provides you with an overview of our professional qualifications, our team members, our technical approach on various types of projects, information on our survey equipment, our locations, how we will mobilize, our safety plan, quality assurance and control examples, our past performance/references, and our subcontracting plan.

Section 1 | Professional Qualifications

This section contains information on our key and support personnel that we intend to use on the contract. DEA's surveying and geomatics team numbers over 150, with 90 of these individuals located in BPA's service territory. We have licensed land surveyors on staff for each of the states where BPA provides service, and we field approximately 20 crews from our office locations throughout the Pacific Northwest.

DEA's Registered Professional Land Surveyors by State in BPA's Service Area							
California	Idaho	Montana	Nevada	Oregon	Utah	Washington	Wyoming
17	6	4	2	20	2	28	1

Project Team Organization



List of Team Members, Experience, and Resumes

The following table shows our team members and their experience performing the services required on this contract. This table is followed by resumes of the project team members.

DEA Staff Experience Matrix

Team Member Name	Role	Route Surveys	Topographic Surveys	GPS Surveys	Transmission Line Support Surveys	Resource Grade GPS Data Collection	Cadastral Surveys	Legal Descriptions/Exhibit Preparation	Preparation of Survey Maps in MicroStation	Survey/Mapping Across Federal/Tribal/Cultural Lands	GIS Attribute Data Collection	Working with LiDAR Point Cloud Data
(1) Kris Westersund, PE, PLS, CWRE	*Survey Manager*	•	•	•	•	•	•	•	•	•	•	•
(2) Jeff Whitson, PLS	*Principal In Charge*	•	•	•	•	•	•	•	•	•	•	•
(3) Jon Broadwater, PLS	*Quality Manager*	•	•	•	•	•	•	•	•	•	•	•
(4) Steve Williams, PLS	*Lead Project Surveyor*	•	•	•	•	•	•	•	•	•	•	•
(5) Danny Denning, PLS	*Lead Project Surveyor*	•	•	•	•	•	•	•	•	•	•	•
(6) Ken Murto, PLS	*Lead Project Surveyor*	•	•	•	•	•	•	•	•	•	•	•
(7) Greg Crites, PLS	*Assisting Project Surveyor*	•	•	•	•	•	•	•	•	•	•	•
(8) Russ Jackson, PLS	*Assisting Project Surveyor*	•	•	•	•	•	•	•	•	•	•	•
(9) Pat Smith, PLS	*Assisting Project Surveyor*	•	•	•	•	•	•	•	•	•	•	•
(10) Sue Tsoi, PLS	*Assisting Project Surveyor*	•	•	•		•	•	•	•	•	•	•
(11) Gil Laas, PLS, CFedS	*Assisting Project Surveyor*	•	•	•		•	•	•	•	•	•	
(12) Jay Bentley, PLS, CFedS	*Assisting Project Surveyor*	•	•	•	•	•	•	•	•	•	•	•
(13) Doug Malin	*Survey Office Technician*	•	•	•	•	•	•	•	•	•		•
(14) Edita Boguslawski	*Survey Office Technician*	•	•	•	•	•	•	•	•	•		•
(15) Liam Madigan	*Survey Office Technician*	•	•	•	•	•	•	•	•	•		•
(16) Lisa Campbell	*Survey Office Technician*	•	•	•	•	•	•	•	•	•		
(17) Tim Schweitzer, LSIT	*Survey Office Technician*	•	•	•	•	•	•	•	•	•		•
(18) Jim Hagner	*Survey Office Technician*	•	•	•	•	•	•	•	•	•		•
(19) Matt Savage	*Survey Office Technician*	•	•	•	•	•	•	•	•	•		•
(20) Bobby Johnson, LSIT	*Survey Office Technician*	•	•	•		•	•	•		•		
(21) Erik Brewster, GISP	*GIS Analyst*	•	•	•	•	•	•			•	•	•
(22) Adam La Plant, PLS	*Field Team Coordinator*	•	•	•	•	•	•	•		•		
(23) Duffy Haggarty, PLS	*Field Team Coordinator*	•	•	•		•	•	•		•		
(24) Dave Williams, LSIT	*Party Chief*	•	•	•	•	•	•			•		
(25) Ryan Smith	*Party Chief*	•	•	•	•	•	•			•		
(26) Deane Blair, LSIT	*Party Chief*	•	•	•	•	•	•			•		
(27) Chad Nelson, LSIT	*Party Chief*	•	•	•	•	•	•			•		
(28) Joe Gigliotti	*Party Chief*	•	•	•	•	•	•			•		
(29) Keith Lyman	*Party Chief*	•	•	•	•	•	•			•	•	
(30) Ian Marx	*Party Chief*	•	•	•	•	•	•			•		
(31) Mark Smith	*Party Chief*	•	•	•	•	•	•			•		
(32) Josh Miller	*Party Chief*	•	•	•	•	•	•	•		•		
(33) Kyle McNaught-Davis, LSIT, EIT	*Party Chief*	•	•	•	•	•	•	•		•		
(34) Erich Hiersche	*Party Chief*	•	•	•		•	•			•		

Kristen M. Westersund, PE, PLS | Contract/Survey Manager

Mr. Westersund is a professional land surveyor (licensed in five states), professional engineer (in two states), and water rights examiner (in Oregon). Since coming to work at DEA in 1988, he has developed particular expertise in performing and managing surveying for large engineering projects, having served as the responsible surveyor for several Washington County road projects and TriMet light rail projects, among others. His diverse experience includes designing a road to summer homes at Lake of the Woods, Oregon, adjusting least squares control networks, recovering stone section corners in Idaho's Owyhee desert, managing the construction staking of downtown Portland light rail improvements, and writing legal descriptions for ODOT's headquarters right-of-way engineering unit. Mr. Westersund was honored as an outstanding senior project manager in DEA's Portland office for 2007 and 2008.

Mr. Westersund has coordinated DEA's survey work for BPA since 2001. He is DEA's manager for on-call surveying contracts with BPA and subcontracts through HDR Engineering, Inc. DEA has provided surveys for transmission lines, access roads, and site development for substations and communications sites.

Resume (1)



Education
BS, Biological Sciences, 1975, Stanford University
BS, Forest Management, 1979, Oregon State University

Registration
Professional Land Surveyor, Oregon (2164), 1985
Professional Land Surveyor, Idaho (5646), 1988
Certified Water Rights Examiner, Oregon (224), 1989
Professional Land Surveyor, Washington (33152), 1996
Professional Civil Engineer, Oregon (31977), 1998
Professional Civil Engineer, Washington (33152), 2000
Professional Land Surveyor, Montana (14728 LS) 2001
Professional Land Surveyor, Alaska (10607), 2002

Professional Affiliations
Professional Land Surveyors of Oregon
Alaska Society of Professional Land Surveyors
National Society of Professional Surveyors

Years with DEA
27 (1988)

Years with Other Firms
10

Experience:

I-5 Corridor Reinforcement Project, for BPA, Cowlitz and Clark Counties, Washington and Multnomah Counties, Oregon

DEA is providing surveying and mapping services for this proposed 80-mile 500kV transmission line between proposed new substations near Castle Rock, Washington, and Troutdale, Oregon. DEA began the project working directly for BPA, and then continued working through a subcontract to HDR Engineering, Inc. The currently authorized project budget is over $13.5 million.

A mix of GPS, conventional land surveying, and LiDAR imaging technologies was used to gather spatial data. The proposed route is being surveyed in rugged, tree-covered terrain, with areas of limited access. DEA is currently supplementing the project design data, staking the L-Line, and providing documents for right-of-way and permit acquisition.

As contract manager, Mr. Westersund is a key part of DEA's management team. He manages the contracts, scopes, budgets, invoices, and project reports. He develops statements of work and budgets appropriate to each stage of the project. Schedules have changed to match client needs and direction.

Access Road GPS Surveys, for BPA; Oregon, Idaho, Montana, and Washington

Mr. Westersund served as project manager for ten projects to survey existing access roads for more than 5,000 miles of transmission lines. DEA inventoried access roads in the Alvey, North Bend, Idaho Falls, Redmond, Kalispell, Ellensburg, The Dalles, and Pasco districts. DEA has also surveyed access roads for specific projects. The access road inventory information is incorporated into BPA's Enterprise Geographical Information System (EGIS). The surveys located the access road from a public highway (already part of the EGIS) to each transmission tower. DEA also located gates, culverts, bridges, etc. and provided metadata including size and condition. Final

locations were adjusted using data from nearby Continuously Operating Reference Stations (CORS) GPS base stations.

Big Eddy – Knight Transmission Project, for BPA, The Dalles, Oregon, to Goldendale, Washington

BPA has recently energized a new 500kv transmission line from Big Eddy Substation, near The Dalles, Oregon, to the proposed Knight Substation, near Goldendale, Washington. DEA provided surveying and mapping services required for BPA to complete the environmental study, design, permits, and right-of-way acquisition for this new 29-mile line and appurtenant access roads. Mr. Westersund served as contract manager.

Washington Public Land Survey System (PLSS) Subdivision, for BPA, Washington

DEA provided sectional subdivision lines from GIS data for dozens of townships in Washington. The lines are used to graphically display BPA parcels and easements in BPA's GIS system. DEA acquired township plats from the Bureau of Land Management, and used that data along with a specialized program provided by BPA to draw the sectional subdivision lines. Mr. Westersund served as project manager.

Columbia River Crossing, for the Oregon and Washington State Departments of Transportation, Vancouver, Washington, and Portland, Oregon

Columbia River Crossing (CRC) was a joint project of the Oregon and Washington State Departments of Transportation to address safety and congestion problems on five miles of Interstate 5 from State Route 500 in Vancouver, Washington, to Victory Boulevard in Portland, Oregon. CRC planned to replace the I-5 bridges over the Columbia River, extend light rail to Vancouver, and improve interchanges in the corridor. DEA led the consultant team for the CRC until the project was cancelled.

DEA provided comprehensive right-of-way and topographic survey services for CRC. We set, measured, and computed the horizontal and vertical control network. DEA resolved existing centerlines, right-of-way lines, and property lines. Some records of survey were filed to document our control and resolution, and the locations of found monuments.

DEA developed the project design base map and terrain model from aerial mapping data provided by CRC. We extensively augmented that data with field surveys, stationary and mobile scanning data, and hydrographic surveys. Mr. Westersund managed the survey and mapping tasks. Survey budgets totaled approximately $4 million.

Jeffery S. Whitson, PLS | Principal in Charge

Mr. Whitson is a vice president and the Oregon Regional Survey Manager for DEA, and holds professional land surveyor registrations in seven states. For this contract Mr. Whitson will be principal in charge and will assist and back up the Survey Manager with oversight of resources needed and quality programs. He will be the professional in responsible charge for projects in the states of Nevada, Utah, and Wyoming. Through his 28-year tenure with DEA, he has performed a variety of surveying services for many public and private clients. His expertise includes managing topographic and right-of-way surveys on large energy and electrical transmission projects; coordinating with contractors and engineers on survey field layout for construction projects; and providing professional survey support for transportation, energy, water, and land development projects.

Resume (2)



Education
AS, Forest Management, 1979, Mt. Hood Community College
American Council of Engineering Companies, Senior Executive Institute, 2013
Seminars: Boundary Locations; Legal Descriptions; Property Law and Riparian Boundaries

Registration
Professional Land Surveyor, Oregon (2361), 1988
Professional Land Surveyor, Washington (34131), 1997
Professional Land Surveyor, Nevada (22320), 2013
Professional Land Surveyor, Utah (8684916-2201), 2013
Professional Land Surveyor, Idaho (15742), 2013
Professional Land Surveyor, California (9127), 2014
Professional Land Surveyor, Wyoming (15312), 2015

Years with DEA
28 (1988)

Years with Other Firms
10

Experience:

Big Eddy – Knight Transmission Project, for BPA and as a Subconsultant to HDR, Oregon and Washington

Mr. Whitson served as principal in charge and provided quality control oversight on the Big Eddy to Knight 500kV electrical transmission line project. He provided review and advice to the DEA project surveyor on the cadastral surveys and boundary surveys for over 29 miles of the primary route and over 50 miles of alternative route transmission corridor.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, for BPA, Oregon and Washington

Mr. Whitson serves as principal in charge and provides quality control oversight on the I-5 Corridor Reinforcement electrical transmission line project as a subconsultant to HDR Engineering. Mr. Whitson is working directly with the HDR survey manager to oversee the staff and equipment resources needed, safety, and quality program, for the control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of the primary route and 150 miles of alternative route transmission corridor.

Carver to McLoughlin 230kV Electrical Transmission Line, Construction Staking and Control Network, for Portland General Electric, Oregon

Mr. Whitson served as project manager and project surveyor for the Carver Substation to McLoughlin Substation electrical transmission line project. Mr. Whitson provided construction layout for over 40 pole positions, GPS control for mapping and construction, clearing limits, and construction support for a 5-mile transmission corridor.

Biglow Canyon Wind Project ALTA Survey, Topographic Survey Boundary Survey, and Partition Plat, for Portland General Electric, Wasco County, Oregon

Mr. Whitson served as project manager and project surveyor for the Biglow Canyon wind project. Mr. Whitson completed an ALTA survey over 3 townships in Wasco County in support of lease agreements for 40 different property owners of the Biglow Canyon wind project. DEA also provided aerial base mapping, ground control, and a boundary survey for the project and a Partition Plat of the substation site.

FERC Relicensing Oak Grove/Three Lynx Hydroelectric Generation Facility, Base Mapping and Boundary Survey, for Portland General Electric, Oregon

Mr. Whitson served as project manager and project surveyor for the Federal Energy Regulatory Commission (FERC) relicensing for the Oak Grove/Three Lynx hydroelectric generation project. Mr. Whitson provided GPS locations of over 60 section corners and one-quarter corners within the project boundaries. The boundary resolution included full research of historic records as well as GPS control for location of the boundary lines.

Willamette Falls Hydroelectric Generation Facility, Construction Layout of Retrofitted Fish Ladder Facilities, for Portland General Electric, Oregon City, Oregon

Mr. Whitson served as project manager for the Willamette Falls hydroelectric generation fish ladder facilities project. DEA provided construction support and construction staking of the fish ladder facilities at the Willamette Falls Generation Facility.

Palomar Natural Gas Pipeline FERC Application, Boundary Resolution of Warm Springs Allotted Lands, Preliminary Route Survey, GIS Support, Bathymetric Surveys, Access Road Alignments, and Schematic Bridge Design, for TransCanada, Oregon

Mr. Whitson served as project manager and was the professional in responsible charge for the Maupin to Molalla natural gas pipeline project. He directed bathymetric surveys for 6 different river crossings, GIS shape files for 400 proposed access roads, boundary resolution, and cadastral surveys for the Warm Springs Indian reservation crossing, which included resolving allotted lands within the reservation for a 200-mile proposed natural gas pipeline. The deliverables included cadastral, boundary, topographic maps, and shape files in AutoCAD and GIS formats.

Carty Lateral Natural Gas Pipeline FERC Application, Cadastral Survey, Boundary Resolution, Legal Descriptions, and Exhibit Maps, for TransCanada, Boardman, Oregon

Mr. Whitson served as project manager and project surveyor for the proposed Boardman to Heppner natural gas pipeline project, which will serve Portland General Electric's proposed natural-gas-powered electrical generation plant. Mr. Whitson was the professional in responsible charge for providing preliminary route mapping, cadastral survey and GIS exhibit, legal descriptions for 32 files, and maps for FERC permitting of a 26-mile route. The deliverables included cadastral and boundary surveys, topographic maps, legal descriptions, and shape files in AutoCAD and GIS formats.

Marmot Dam Decommissioning and Sandy River Sediment Migration Study, for Portland General Electric, Sandy, Oregon

Mr. Whitson served as project manager on the Marmot Dam Sandy River sediment migration study. Mr. Whitson was the professional in responsible charge and directed the survey of 160 bathymetric cross sections of the Sandy River for a sediment migration study for two years prior to removal of the Marmot Dam and five years after the removal. DEA also provided aerial flight GPS control and ground survey support for topographic mapping of Marmot Dam and the Sandy River downstream to the confluence with the Columbia River.

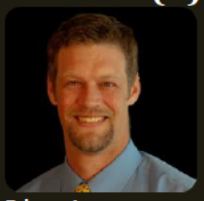
Willamette River Superfund Site Mapping, for the Oregon Division of State Lands, Oregon

Mr. Whitson served as project manager and project surveyor for mapping of riparian lines along the Willamette River from River Mile 12 to the confluence with the Columbia River. The survey included utilizing multi-beam and single-beam sonar for mapping the ordinary low water line as well as a boat-mounted Regal laser scanner to map the ordinary high water line. Research included looking at all deed transfers of tide lands to determine ownerships. The final survey was delivered in AutoCAD and GIS formats.

Jon K. Broadwater, PLS | Project Surveyor

Mr. Broadwater has 19 years of experience as a project surveyor, party chief, and survey technician. As the Oregon Region Survey Project Delivery Manager and a licensed professional land surveyor, his responsibilities include processing of survey data, survey resource management, project management, workflow development, and quality control. His expertise includes data reduction and operation of Leica total stations, levels, and GPS equipment. He is also experienced with boundary, right-of-way, control, construction, and topographic surveys. Mr. Broadwater has been a leader in laser scanning technology and is the Oregon regional representative for HDS laser scanning. Mr. Broadwater will act as the quality manager for this contract.

Resume (3)



Education
BS, Geography, Oregon State University, 1996

Registration
Professional Land Surveyor, Oregon (61360LS), 2006

Software Proficiencies
Leica Total Stations
LISCAD
AutoCAD Civil 3D
Leica HDS Scanners
Cyclone Software
MicroStation
In Roads
Leica Geo Office
Microsoft Suite
Arc Map
Trimble Business Center
Trimble Pathfinder Office

Security Clearance
Transportation Worker Identification Credential (TWIC)

Years with DEA
19 (1996)

Years with Other Firms
0

Experience:

On-Call Land Surveying Services, for BPA, Washington and Oregon

Mr. Broadwater is serving as a supporting project surveyor and quality manager for this contract. Services include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, and high definition laser scanning. Mr. Broadwater has been involved with many different projects over the years and has served in almost all labor classifications at one time or another. This experience brings with it a depth of knowledge and experience is beneficial to BPA in the execution of his quality assurance/quality control (QA/QC) role.

Hills Creek – Lookout Point No. 1 Transmission Line Rebuild, for BPA, Lane County, Oregon

Mr. Broadwater prepared and provided quality control for acquisition documents for this project on a line that BPA acquired from Lane County Electric Cooperative in the 1950s. This project runs 26 miles from Hills Creek Reservoir, just west of Oakridge, Oregon, to Lookout Point Dam near Lowell, Oregon. Starting in 2013, DEA provided field surveying, mapping, and legal descriptions for approximately 160 access road and public road approach acquisition documents. These include documents for: U.S. Forest Service (Willamette National Forest), U.S. Army Corps of Engineers, Union Pacific Railroad (UPRR), various private lands, and timber companies.

Big Eddy – Knight Transmission Project, for BPA, Oregon and Washington

BPA, in conjunction with HDR Engineering, Inc., requested DEA to provide field surveying, mapping, and legal description services for approximately 250 acquisitions related to new transmission line right-of-way, access roads and public road approach permits, utility crossing permits, various railroad crossing permits, and a U.S. Army Corps of Engineers Columbia River Crossing permit. These included documents for: Wasco County, Oregon; Klickitat County, Washington; State of Oregon; State of Washington; U.S. Army Corps of Engineers; Washington State Department of Natural Resources; BNSF Railway, UPRR, and Bureau of Indian Affairs (BIA) lands. Mr. Broadwater served as a support project surveyor on this project. He provided oversight and quality control of many different facets of the project, ranging from resource management and research to acquisition documents.

Survey of 'A' Canal, for U.S. Bureau of Reclamation, Klamath Falls, Oregon

As project manager, Mr. Broadwater was responsible for surveying services for the 'A' Canal in Klamath Falls, Oregon, as part of the MWH Americas, Inc. contract with the U.S. Bureau of Reclamation. DEA investigated the land record availability and monumentation of the A-Canal Rights-of-Way from the headworks to the C-Drop, and developed a survey work plan for a Level 1 survey. The Bureau of Reclamation used the Level 1 survey and subsequent ARC-GIS layer defining the boundaries to install federal boundary markers on each side of the canal.

Topographic Mapping of Airport Way, for Port of Portland, Portland, Oregon

As task lead, Mr. Broadwater oversaw the office and field effort to perform a pre-design topographic survey of the pavement areas on Airport Way in the vicinity of Portland International Airport (approximately 6 lineal miles). DEA used a ground LiDAR mobile mapping system to survey the pavement and produce maps from point cloud data. DEA made three passes at low speed to capture maximum point density and quality. In addition to the topographic map, DEA also produced a digital terrain model with 0.2-foot contours of the project area.

17th Street Dock Reconstruction, for Columbia River Maritime Museum, Astoria, Oregon

Working as a subconsultant to Berger ABAM, DEA provided land and hydrographic surveying services to prepare a Base Map and Digital Terrain Model for the 17th Street Dock reconstruction. A multidisciplinary survey operation was conducted to collect the information, including single-beam and multibeam bathymetric surveys below the water surface as well as static laser scanning survey to collect point cloud data on the above-water structure and shoreline. Data from all systems were combined to make an "all-encompassing" 3D image of the existing conditions at the site. Mr. Broadwater served as DEA's project manager.

Dredge "Oregon" 3-D Scanning, Port of Portland, Portland, Oregon

DEA provided 3D mapping services for the stern of the dredge vessel "Oregon" to assist with designs to relieve stress from the stern. DEA provided a static laser scan of the stern with particular focus on the port and starboard spud wells. From the point cloud data, DEA prepared a model of the data and provided 360-degree photographs of the stern of the vessel to assist in future modeling and to provide the Port of Portland with communication and visualization tools. Then DEA prepared a topographic base map of the vessel in accordance with the port's drafting standards. The map included a fully rendered model of the stern, the spud wells, the spud keepers, and the bottom of the hull. Mr. Broadwater served as project manager.

Fall Creek Spillway, for U.S. Army Corps of Engineers, Portland District, Lowell, Oregon

DEA survey was tasked with scanning the structural and mechanical components of the Fall Creek Dam spillway gates. The scans were sufficiently dense to resolve all structural components within the survey area, including tainter gate skin plates and reinforcement, trunion arms, hubs, concrete surfaces and joints, wire ropes and pulleys, and external housing of visible mechanical components, such as motors, to a relative positional accuracy of 1/16 inch. The datum was referenced to NAD83 HARN control and projected to the Oregon South Zone State Plane Coordinate System. Elevations were on the Vertical Datum of 1988 through the 2003 geoid (NAVD88/03). Scan data was then registered and mapped using both Civil 3D and Revit to produce a fully rendered 3D model of the gate components. Mr. Broadwater was the project manager for this work release.

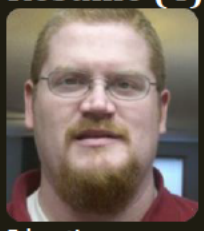
Kimberly-Long Highway (OR 402) Embankment Failure Survey, for ODOT, Kimberly, Oregon

DEA used a combination of 3D laser scanning and hydrographic laser scanning to create a Digital Terrain Model (DTM) for design of a stabilized/armored embankment along the Kimberly-Long Creek Highway (OR 402). Utilizing static 3D laser scanning, DEA collected 1,000 feet of data in each direction from the embankment failure point. Bathymetric scanning data was collected of the North Form of the John Day River 500 feet upstream of the failure and 300 feet downstream of the failure, and from the edge of water along each shore. The collected data were merged to create a comprehensive DTM for design. Mr. Broadwater served as project manager for this effort.

Stephen C. Williams, PLS | Project Surveyor

Mr. Williams is a licensed professional land surveyor in three states, and has 20 years of experience serving a variety of public and private clients. He has completed route surveys, aerial mapping surveys, construction staking surveys, topographic mapping and boundary surveys, long and short plats, 3D laser scanning projects, ALTA/ACSM surveys, transmission line surveys, GPS control surveys, and lot line adjustments. Mr. Williams was an adjunct instructor for two years in the Civil Engineering program at the University of Portland, in Portland, Oregon. He has extensive experience in cadastral and transmission line retracement surveys, and special expertise in transmission line acquisition surveys and related legal documents. Mr. Williams is very familiar with the laws and regulations of local municipalities and government agencies in survey-related matters. His responsibilities include data reduction, LISCAD, MicroStation, writing and interpreting legal descriptions, and project oversight. He is also certified by DEA as a Quality Manager.

Resume (4)



Education
AAS, Surveying Geomatics, 1999, Peninsula College

Registrations
Professional Land Surveyor, Washington (42680), 2006
Professional Land Surveyor, Oregon (84070), 2011
Professional Land Surveyor, Idaho (14800), 2011

Professional Affiliations
Professional Land Surveyors of Oregon (PLSO)
Land Surveyors Association of Washington (LSAW)

Years with DEA
17 (1999)

Years with Other Firms
3

Experience:

On-Call Land Surveying Services, for BPA, Oregon and Washington

Mr. Williams serves as a project surveyor and task lead on various projects for BPA. Services typically include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, LiDAR and terrestrial crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, plan and profile mapping, and preparation of acquisition documents for transmission line and beam path rights-of-way and related access roads.

Wautoma-Ostrander Record of Survey, for BPA, Clackamas County, Oregon

BPA has identified portions of its transmission line network that are underutilized and may be overgrown. There is concern that future land development in certain areas could lead to right-of-way encroachments. Mr. Williams was the project surveyor and task lead for this project. He and his team created an OPUS Projects GPS control network for RTK and RTN surveying, monumented the controlling acquisition alignments, posted the right-of-way limits, and prepared and filed a Record of Survey for 12 miles of underutilized right-of-way within the Wautoma-Ostrander Transmission Line Corridor, in Clackamas County, Oregon. In the course of this survey, approximately 30 cadastral monuments and 105 steel lattice transmission towers were located to aid in resolving the transmission line alignment.

Big Eddy – Knight Transmission Project, for BPA, The Dalles, Oregon, to Goldendale, Washington

BPA has built and energized a new 29-mile transmission line from The Dalles, Oregon, to Goldendale, Washington. BPA, in conjunction with HDR Engineering, Inc., requested DEA to provide field surveying, mapping, and legal description services for approximately 250 acquisitions related to new transmission line right-of-way and access road acquisitions, public road approach and crossing permits, and several Records of Survey. Mr. Williams was the project surveyor and task lead for this project. He and his team created a static GPS control network for RTK, rapid static, and RTN surveying; provided LiDAR truthing surveys, foreign crossing surveys, cadastral retracement surveys, and boundary resolutions across nine townships; provided topographic surveying and mapping for the new Knight Substation; and prepared acquisition documents, exhibits, and GIS shape files for Wasco County, Oregon; Klickitat County, Washington; State of Oregon and State of Washington; U.S. Army Corps of Engineers; Washington State Department of Natural Resources; BNSF Railway, UPRR, BIA lands, and

various private lands. His team produced seven Records of Survey that included the final design route (Oregon and Washington), Washington Department of Natural Resources (DNR) applications (two land and one aquatic), Knight Substation Fee acquisition, and a control survey with all of the unused cadastral monuments that were located during preliminary route surveys that were performed before the project's Record of Decision. The team also produced plan maps for this new line.

I-5 Corridor Reinforcement Project, for BPA, Southwest Washington and Northwest Oregon

BPA is proposing an 80-mile, 500kV transmission line project located primarily within Clark and Cowlitz Counties, Washington. BPA, in conjunction with HDR Engineering, Inc., requested DEA to provide field surveying, mapping, and legal descriptions for acquisition services. Mr. Williams is the acquisitions task lead for this project. He and his team are tasked with preparing approximately 180 acquisitions related to new transmission line right-of-way, public road approaches, crossing permits, and approximately 22 Records of Survey involving the resolved public and private boundaries across 210 sections in 20 townships. Acquisition documents, exhibits, and shape files are being prepared for: Cowlitz and Clark Counties, Washington Department of Transportation, Washington State Department of Natural Resources, U.S. Army Corps of Engineers, BNSF Railway, UPRR, Olympic Pipeline, Clark Public Utilities, Cowlitz Public Utilities, PacifiCorp, various private lands and timber land companies, and others.

Hills Creek – Lookout Point No. 1 Transmission Line Rebuild, for BPA, Lane County, Oregon

BPA acquired a partial transmission line system from Lane County Electric Cooperative in the 1950s. This project runs approximately 26 miles from Hills Creek Reservoir, just west of Oakridge, Oregon, to the Lookout Point Dam near Lowell, Oregon. BPA requested DEA to provide field surveying, mapping, and legal description services for approximately 160 access road acquisition documents, and public road approach and crossing permit documents, all in support of the rebuild design for this line. Mr. Williams was the project surveyor and task lead for this project. He and his team created an OPUS Projects GPS control network for RTK and RTN surveying, and provided resource grade GPS mapping for access road surveys; provided LiDAR truthing surveys, foreign crossing surveys, cadastral retracement surveys and boundary resolutions across six townships; and prepared acquisition documents, exhibits, and GIS shape files for the U.S. Forest Service (Willamette National Forest), U.S. Army Corps of Engineers, UPRR, various timber companies, and private lands. They also produced Hybrid plan and profile maps, and updated them with the rebuild design and new acquisition mapping for the first 5 miles, and produced new plan and profile maps for 19 miles, due to the inaccuracies of the record information that BPA had received from Lane County Electric when it acquired the existing line.

Morrow Flat Substation Line Upgrade, for BPA, Morrow and Umatilla Counties, Oregon

BPA has a large transmission line corridor that runs westerly from the McNary Substation, near Hermiston, Oregon. BPA requested the DEA to provide field surveying, mapping, and legal description services for approximately 40 access road acquisition documents, public road approaches, and crossing permit documents, all in support of the line upgrade for portions of the McNary-Boardman No. 1 and McNary-Jones Canyon No. 1 transmission lines. Mr. Williams was the project surveyor and task lead for this project. He and his team created an OPUS Projects GPS control network for RTK and RTN surveying, and provided resource grade GPS mapping for access road surveys; provided LiDAR truthing surveys, foreign crossing surveys, various cadastral retracement surveys and boundary resolutions; and prepared acquisition documents, exhibits, and GIS shape files for Umatilla County, Morrow County, City of Boardman, U.S. Bureau of Reclamation, Northwest Pipeline, Umatilla Electric Cooperative, and various private lands. They also produced Hybrid plan and profile maps and updated them with upgrade information and new acquisition mapping.

Danny M. Denning, PLS | Project Surveyor

Mr. Denning's commitment to be a client advocate, collaborative team member, and provider of project quality oversight has allowed him to be an effective leader. He provides project management, completing challenging and interesting projects by offering creative problem solving and quality service as a trusted advisor to any project that he is associated with, both in the role of a project manager and as a project surveyor. Mr. Denning has more than 25 years of experience providing land surveying services, and has extensive experience and knowledge in site development, utility and roadway design projects, land division projects, and construction projects. He is a registered land surveyor in Oregon, Washington, and California.

Resume (5)



Education
BS, Marine Engineering, 1981, U.S. Merchant Marine Academy, Kings Point, New York

Registrations
Professional Land Surveyor, Oregon (LS56640), 2002
Professional Land Surveyor, California (L 7777), 2001
Professional Land Surveyor, Washington (48377), 2011

Professional Affiliations
Professional Land Surveyors of Oregon
Land Surveyor's Association of Washington

Years with DEA
7 (2009)

Years with Other Firms
19

Experience:

Grand Coulee – Okanogan No. 2 Access Road Improvement Project, for BPA, Douglas and Okanogan Counties, Washington

Fulfilling the role of a BPA Acquisition Land Surveyor, Mr. Denning's duties include overseeing the preparation and QA/QC review of acquisition documents and supporting documentation, tracking the progress of acquisition document submittals, and providing direction and recommendations to the contract surveyors and BPA team regarding the proposed acquisitions. The project spans six townships.

Olympia – Grand Coulee No. 4 Transmission Line Rebuild Survey, for BPA, Douglas, Grant, and Kittitas Counties, Washington

For this project, DEA was tasked with preparing access road acquisition documents and hybrid maps for a route of approximately 25 miles, crossing Washington Department of Natural Resources tracts and spanning five townships. As project surveyor, Mr. Denning's duties included field data analysis; title review; acquisition document preparation; and quality review of exhibits, maps, and shape files.

North Bend Radio Site, for BPA, King County, Washington

DEA staked the current North Bend Radio Site to Covington Substation beam path easement and collected tree information as directed by the BPA forester. As project surveyor, Mr. Denning's duties included project and data collection oversight, field data analysis, legal description review and calculations, and recommendations. DEA used GPS and total stations to establish control, stake the easement, and collect data for the project.

Deer Creek Flats Radio Site, for BPA, Snohomish County, Washington

For this project, DEA was asked to provide a topographic survey of a potential new site for a BPA communication facilities upgrade. As project surveyor, Mr. Denning's duties included project coordination, direction to field crews, field data analysis, and recommendations. GPS and terrestrial surveying instruments with scanning capability were used to gather data on this Washington Department of Natural Resources tract.

Maupin – Tygh Valley No. 1 Transmission Line Rebuild Survey, for BPA, Wasco County, Oregon

DEA provided surveying and mapping as required to prepare access road acquisition documents for a route spanning approximately 3 miles, across private and tribal property. As project surveyor, Mr. Denning's duties included field data analysis; title review; acquisition document preparation; providing of shape files; and QA/QC of exhibits, maps, and shape files.

Hills Creek – Lookout Point No. 1 Transmission Line Rebuild Survey, for BPA, Lane County, Oregon

For this project, DEA provided surveying and mapping required to prepare access road acquisition documents for a route spanning approximately 25 miles, primarily in the Willamette National Forest, and spanning six townships. As project surveyor, Mr. Denning's duties included project and data collection oversight; field data analysis; title review; acquisition document preparation; and QA/QC of acquisition documents, exhibits, maps, and shape files.

North Bonneville – Troutdale No. 1 Transmission Line Rebuild Survey, for BPA, Multnomah and Hood River Counties, Oregon

DEA provided surveying and mapping required to prepare access road acquisition documents for a route of approximately 22 miles, involving tracts managed by the U.S. Forest Service, Washington Department of Natural Resources, and Washington Parks and Recreation, as well as Longview Timberlands, LLC. As project surveyor, Mr. Denning's duties included project and data collection oversight; field data analysis; title review; acquisition document preparation; and QA/QC of acquisition documents, exhibits, maps, and shape files. DEA utilized GPS and terrestrial surveying instruments with scanning capability to acquire the necessary cadastral and topographic data to resolve the PLSS and private boundaries and the transmission line survey.

Keeler – Tillamook No. 1 Transmission Line Survey, for BPA, Washington and Tillamook Counties, Oregon

For this project, DEA was tasked with providing surveying and mapping to complete the design and acquire rights and permits to rebuild the transmission line, for a route spanning approximately 60 miles including the Tillamook National Forest. As project surveyor, Mr. Denning's duties included project and data collection oversight; field data analysis and recommendations; right-of-way resolution; preparation of acquisition documents; and QA/QC of acquisition documents, exhibits, maps, and shape files.

Big Eddy – Knight 500kV Transmission Line, for BPA, Wasco County, Oregon, and Klickitat County, Washington

Mr. Denning was quality manager for this project in which DEA provided full survey support services for three alternative routes (each approximately 28 miles long) as required for the design and right-of-way acquisitions. This included completing L-Line survey, access road surveys and legal descriptions, cadastral surveys, crossing inventory, plan mapping, and profile mapping.

Hanford – Ostrander No. 1 Transmission Line Survey, for BPA, Clackamas and Multnomah Counties, Oregon, and Skamania, Klickitat, Benton, and Yakima Counties, Washington

As project surveyor, Mr. Denning's duties included project and data collection oversight, field data analysis, and recommendations. DEA provided LIDAR-truthing for design surveying services for the rebuild/upgrade of approximately 160 miles of existing transmission line.

Knight – Wautoma Transmission Line Survey, for BPA, Multnomah County, Oregon, and Klickitat County, Washington

As project surveyor, Mr. Denning's duties included project and data collection oversight, field data analysis, and recommendations. DEA provided LIDAR-truthing for design surveying services for the addition of a fiber optic line to approximately 84 miles of an existing transmission line.

Kenneth J. Murto, PLS | Project Surveyor

Mr. Murto is licensed as a professional land surveyor in Oregon and Washington. He has over 40 years of experience in right-of-way and boundary resolution; topographic surveying; preparation of plats and legal descriptions; construction management, calculations, and staking; establishing horizontal and vertical control networks using terrestrial and GPS methods; and field data collection. Mr. Murto has special expertise in managing GPS survey projects. He has experience processing GPS and terrestrial data using Trimble Business Center (TBC) and Trimble Geomatics Office (TGO) software, LEICA Geomatics Office (LGO), and Star*Net Plus least squares adjustment software. Mr. Murto has completed NGS OPUS-Projects Manager Training and has used OPUS-Projects on BPA projects.

Resume (6)



Education
BS, Anthropology, 1972, University of Oregon
Graduate Studies in Community Health, 1975, University of Oregon
Courses in Drafting Technology, 1979, Lane Community College

Registration
Professional Land Surveyor, Oregon (2461), 1990
Professional Land Surveyor, Washington (49914), 2012

Professional Affiliations
Professional Land Surveyors of Oregon
Land Surveyors' Association of Washington

Years with DEA
25 (1990 & 2006)
**rehire

Years with Other Firms
15

Experience:

Schultz – Wautoma 500 kV Transmission Line, for BPA, Benton, Grant, and Kittitas Counties, Washington

Mr. Murto was a task leader on this 76-mile transmission line project. His duties included records research, control network design, scheduling GPS field crews, baseline processing, adjustment, and report preparation. The network provided control for aerial mapping, subsequent RTK GPS measurements to boundary monuments and topographic features, and the staking of new tower positions.

Big Eddy – Knight Transmission Project, for BPA, The Dalles, Oregon, to Goldendale, Washington

Mr. Murto was the GPS task leader on this new 29-mile transmission line project. His work included control network design and adjustment using TGO software for nine primary control points. The control network was constrained to Washington State Reference Network (WSRN) and National Geodetic Survey (NGS) Continuously Operating Reference Stations (CORS) stations. It provided control for LiDAR checking, RTK GPS measurements to found monuments, topographic mapping, and the tower staking. Survey crews collected RTK measurements using correctors from the WSRN system, where cellular phone coverage was unreliable, and from base stations set on primary control points.

I-5 Corridor Reinforcement Project, for BPA, Southwest Washington and Northwest Oregon

This proposed 80-mile 500kV transmission line project is located in Clark and Cowlitz Counties, Washington, and ends near Troutdale, Oregon. Mr. Murto established the primary control network, consisting of 66 monuments and subsequent secondary control points. Following planning and reconnaissance, a network of static and rapid static vectors connected the primary points to WSRN and NGS CORS stations. The vectors were processed, analyzed, and adjusted using Star*Net Plus software. The network has served as control for LiDAR mapping and subsequent fast static GPS, RTK, and terrestrial measurements.

Fairmount – Port Angeles Corridor Record of Survey, for BPA, Clallam County, Washington; and Monroe – Sno-King No. 1 Corridor Record of Survey, Snohomish County, Washington

Mr. Murto is the project surveyor for two BPA transmission line corridor Records of Survey. Primary control networks were created for both using OPUS-Projects, serving as the basis for subsequent fast static GPS, RTK, and terrestrial measurements (with Trimble equipment) to cadastral monuments and transmission towers. Measurement data was processed with TBC. The 20-mile controlling alignment for Fairmount-Port Angeles has

been monumented and the right-of-way has been posted. A Record of Survey was filed in Clallam County. The 10-mile Monroe–Sno-King survey is ongoing. The acquisition alignment will be monumented, and a Record of Survey is scheduled to be filed in Snohomish County in March 2016.

Drainage Surveys at Covington, Tacoma, and Olympia Substations, for BPA, King, Pierce, and Thurston Counties, Washington

Mr. Murto was DEA's task leader for three substation drainage surveys, ranging from 8 to 22 acres in size, to support analysis of current drainage systems and planning of system modifications. The surveys were controlled horizontally by substation baseline monuments. RTK GPS, total-station, and differential leveling measurements were collected. At Tacoma and Olympia, Trimble instruments and TBC software were used. MicroStation base maps were delivered in two vertical datums: NAVD88 and the Local Substation datum. Covington base maps were later amended with utility surveys, using Trimble instruments and software.

Bonneville PH1 – Hood River No. 1 Design Survey, for BPA, Multnomah and Hood River Counties, Oregon

This survey updated mapping for design of a 24-mile transmission line rebuild in rugged country west of the Hood River Substation. As project surveyor, Mr. Murto provided primary project control using OPUS-Projects. Deliverables included LiDAR Retracement of Construction Line Report, crossing surveys, LiDAR verification surveys, LiDAR confidence checks, and a survey base map. Mr. Murto retraced alignments in three locations where analysis of the LiDAR retracement showed major differences with record data. RTK GPS and total station measurements were made to existing structures and cadastral monuments.

FY14, FY15, and FY16 Substation Baseline Modernization Surveys, for BPA, Oregon and Washington

Mr. Murto was the project surveyor on 18 baseline modernization surveys. The surveys establish modern survey control values for substation baseline monuments to support civil and substation design and construction, and to improve integration of LiDAR and GIS with survey mapping data. The work at each substation included recovery of existing baseline monuments, survey of existing footings, setting new monuments as needed, a terrestrial horizontal control network, a vertical control survey, a static GPS survey, and baseline survey reporting. Trimble GPS and total station instruments and TBC software were used.

John Day – Marion No. 1 Slide Study, for BPA, Linn County, Oregon

BPA observed ground movements along a transmission line near Spring Mountain in Linn County. The survey established existing positions for future monitoring of tower movement. A DEA crew used Trimble GPS and total stations to make initial measurements under the direction of a BPA Project Surveyor. Mr. Murto processed static GPS measurements using NGS OPUS and adjusted the network, including differential level measurements, using TBC software. Deliverables included a monitoring report, geodetic control reports, and a survey base map. Mr. Murto previously served as project surveyor on several observations of BPA's Mount Solo Slide Monitoring project in Cowlitz County, Washington.

Alberton RS Construction Staking, for BPA, Mineral County, Montana

Mr. Murto was the task leader for construction staking along a road to this new Radio Site near Alberton, Montana. The site had steep terrain and trees obstructing line of sight. The DEA survey crew was provided with construction plans and calculated drainage, centerline, and slopes along the proposed road. They adjusted slopes at two locations to keep the earthwork on BPA property. Mr. Murto communicated those changes to the BPA Project Surveyor. Property and cadastral corners and a boundary line were flagged for the contractor.

Gregory A. Crites, PLS | Project Surveyor

Mr. Crites is a professional land surveyor with over 45 years of experience. He has served on the boards of the Professional Land Surveyors of Oregon and the Western Federation of Professional Surveyors. Before working at DEA, he owned and operated his own land surveying company on the Oregon coast for six years. Mr. Crites was instructor for the Surveying/Engineering Technology Program at Clatsop Community College in Astoria, Oregon, for four years, and also served for three years as adjunct instructor of civil engineering at the University of Portland. He has extensive experience in cadastral surveys, gained over 12-1/2 years managing surveying services for an industrial forestry company in Oregon.

He has extensive experience in many facets of transmission line surveys, including research, control surveys, route surveys, topographic mapping, boundary surveys, PLS-CADD, LiDAR and conventional aerial imagery, access roads, tower site studies, environmental delineations, system upgrades, hot check analysis, substation layout, construction, condemnations, acquisition descriptions, utility coordination, QA/QC, and public relations. He is currently serving as Senior Project Manager on the BPA I-5 Corridor Reinforcement Project, a proposed 80-mile, 500kV transmission line between Troutdale, Oregon, and Castle Rock, Washington. Mr. Crites is trained in civil design software and is proficient in MicroStation.

Resume (7)



Education
BS, Forest Engineering, 1974, Oregon State University
BS, Forest Science, 1974, Oregon State University

Registrations
Professional Land Surveyor, Oregon (1887), 1980
Professional Land Surveyor, Washington (34132), 1997
Registered Land Surveyor, Arizona (41893), 2005

Professional Affiliations
Western Federation of Professional Surveyors, Oregon Delegate
Professional Land Surveyors of Oregon (PLSO)
Land Surveyors Association of Washington (LSAW)
National Society of Professional Surveyors
Arizona Professional Land Surveyors (APLS), corresponding member
President, PLSO, Pioneer Chapter, 1992
President, PLSO, Willamette Chapter, 2000
Oregon State Board of Examiners for Engineers and Land Surveyors, PLSO Liaison, 1999
Charter Member, Oregon GPS Users Group
Editor, The Oregon Surveyor, 2013–present

Years with DEA
23 (1993)

Years with Other Firms
24

Experience:

I-5 Corridor Reinforcement Project (Castle Rock-Sundial No. 1), for BPA, Cowlitz and Clark Counties, Washington, and Multnomah County, Oregon
Commencing in August 2009 under contract with BPA (and now as a subconsultant to HDR Engineering, Inc.), DEA has been providing the survey and mapping to collect data necessary to complete design and acquire rights and permits to construct this new 90-mile transmission line. DEA is utilizing a mix of GPS, terrestrial, and LiDAR imaging technologies for gathering spatial data with a project GIS as our management tool. The preferred route alternative being surveyed is located in rugged, tree-covered terrain, with areas of limited access. The alignment to be constructed is being fully surveyed with permanent monuments placed at all tower centers and points on tangent. The project includes ties to monumentation of the Public Land Survey System (PLSS), and extensive mapping of physical features including underground and overhead utilities, buildings, roads, railroads, and water courses. DEA is developing standard BPA plan and profile mile maps. Mr. Crites serves as project manager.

Schultz – Wautoma 500kV Transmission Line Project, for BPA, Central Washington State, 2001–2003
Mr. Crites was the project manager for survey, mapping, and land acquisition for this new 70-mile, double-circuit 500kV transmission line from the Schultz substation near Ellensburg, Washington, through the Vantage substation, the Midway substation, and terminating at the Wautoma substation. Mr. Crites managed a project office with as many as 20 employees, and oversaw field survey crews performing GPS surveying for horizontal and vertical control, L-Line surveying using both conventional and RTK techniques, cadastral retracement surveying, crossing studies, tower site studies, construction staking, conductor clearance analysis, and

substation layout surveys. Office tasks included land acquisition requests and exhibits, hardshell profiles, cadastral hardshells, right-of-way mapping, geodetic control survey and datasheets, condemnation exhibits and descriptions, and project documentation. Mr. Crites also coordinated delineation of environmentally sensitive areas, access road surveys, utility coordination, planning and zoning research, highway, railroad, and utility right-of-way resolutions, ownership data, and customized PLS-CADD data for engineering design. Energization occurred in December 2005, and total project costs were under budget by $16 million.

Walla Walla – Pendleton No. 1 Rebuild, for BPA, Umatilla County, Oregon

Under the project management/supervision of Mr. Crites, DEA established Real-Time Kinematic GPS base station control, performed data/map checks on existing overhead crossings against LiDAR data sets, tied existing cadastral monumentation relative to the PLSS, and checked as-built information on existing overhead lines on this rebuild project of the Walla Walla-Pendleton No. 1 115kV transmission line in Walla Walla County, Washington, and Umatilla County, Oregon.

On-Site Survey Consultant, for BPA, Portland, Oregon

Mr. Crites acted as an on-site survey consultant for 2-1/2 years. As project surveyor, Mr. Crites supervised contract field survey crews providing surveying services for design, construction, and maintenance of transmission lines, substations, microwave, and VHF sites throughout Oregon and Washington. Additionally, he was extensively involved in GPS control survey design, implementation and post-processing, data base development throughout the BPA system, and construction layout within numerous substations.

In-house Technical Consultant, for BPA, Vancouver, Washington

Mr. Crites provided ongoing technical assistance from 2002 to 2003 for various BPA force account projects throughout the BPA service area. This work included Washington Department of Natural Resources crossing permit applications, Washington Department of Transportation (WSDOT) franchise applications (for placement of BPA transmission facilities inside DOT rights-of-way), fire system water service mapping and planning applications for substations, linear regression analysis for acquired transmission line mapping and centerline descriptions, and resolution of WSDOT rights-of-way.

Klondike Schoolhouse – John Day No. 1 230kV Transmission Line Project, for BPA, Eastern Oregon

Mr. Crites served as project manager providing pre-design services in surveying, environmental assessment, and real property appraisals for this new 14-mile transmission line constructed in rural Sherman County, Oregon. The project required two new substations and modifications to an existing 500kV substation. Working alongside BPA representatives, surveying services included preliminary angle points using GPS real-time RTK for review by the BPA Project Engineer, GPS control surveys (densification of a control network previously established for BPA by DEA), L-Line surveying, planimetric data collection, crossing studies, utility locates, records research, resolution of PLSS boundaries, recovery and ties to private property monumentation, resolution of public rights-of-way, access road surveys, mapping and boundary survey for proposed substation sites, tower staking, tower site studies, and a Record of Survey to perpetuate the transmission centerline. DEA also developed PLS-CADD design data, incorporating photogrammetric information.

R. Russell Jackson, PLS | Assisting Project Surveyor

Mr. Jackson is an associate at DEA and is an experienced land and hydrographic surveyor. He serves as Chief of Parties in the Portland office, supervising and scheduling field crews and providing training and equipment. His 40 years of experience includes 13 years with the U.S. Army Corps of Engineers Portland District. He is skilled in conducting floodplain and cadastral surveys as well as hydrographic surveys. He is also experienced in surveying for engineering design and construction.

Resume (8)



Education
Drafting Courses, 1976, Portland Community College
Civil Engineering Courses, 1977, Portland State University

Registration
Professional Land Surveyor, Oregon (47721), 2006
U.S. Coast Guard 50-Ton Inland Master's License

Training
BNSF Railroad Safety
TWIC Badge

Years with DEA
27 (1989)

Years with Other Firms
13

Experience:

On-Call Land Surveying Services, for BPA, Oregon and Washington

Mr. Jackson serves as a party chief or project surveyor on various projects for BPA. Services typically include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, and high definition laser scanning.

Fairmount – Port Angeles Corridor Record of Survey, for BPA, Washington

DEA provided surveying services for an approximate 20-mile transmission line to resolve the right-of-way. Mr. Jackson was responsible for processing the GPS control network using OPUS Projects.

Sno-King No. 1 Corridor Record of Survey, for BPA, Snohomish County, Washington

DEA provided surveying services for an approximate 10-mile transmission line to resolve the right-of-way. Mr. Jackson was responsible for processing the GPS control network using OPUS Projects.

Carty-Lateral Gas Pipeline Survey, for TransCanada, Hermiston, Oregon

DEA provided surveying services for design and construction layout for a new 20-inch, 21-mile-long gas line between the Portland General Electric coal plant and the Ione Compressor Station. Mr. Jackson served as the project surveyor and provided a GPS control network with OPUS for photogrammetric mapping. A cadastral survey, right-of-way survey, and boundary surveys were resolved for the entire route. He was responsible for construction staking and as-built surveys for the pipeline. GPS and RTK were used for the entire survey, and field crews incorporated ArcGIS with the construction staking.

Madras Partition and Right-of-Way Surveys, for Central Oregon Community College, Madras, Oregon

Mr. Jackson served as project surveyor and was responsible for scheduling field crews and providing office calculations. In this role, he provided preparation of the required documents for the resolution of each property to be acquired. He also led the preparation of legal descriptions and exhibit maps. This project involved establishing new property lines on parcels that had been subdivided previously.

SW 124th Avenue, Tualatin-Sherwood Highway to Grahams Ferry, for Washington County, Oregon

Mr. Jackson was the project surveyor for this 4.3-mile roadway project. DEA created a GPS control network with OPUS, created a base map for design, and resolved the boundary and right-of-way.

Patrick N. Smith, PLS | Assisting Project Surveyor

Mr. Smith has over 40 years of experience performing cadastral, topographic, GPS, cross-section, boundary, control, construction, and hydrographic surveys, and has served as both a field supervisor and project surveyor. He is proficient with GPS and Leica instruments and data collection systems, as well as related software computing programs. Mr. Smith's experience includes serving as project surveyor for numerous remote location road improvement projects, flood studies, and mapping project surveys. He has performed surveys for Oregon Parks and Recreation Department, Washington County, Oregon State Board of Forestry, Federal Highway Administration (FHWA), Washington Department of Natural Resources, and Oregon Department of Transportation (ODOT). He has also served as party chief on several U.S. Forest Service survey projects in the Siskiyou, Rogue, Winema, Fremont, Willamette, Siuslaw, Deschutes, and several other national forests in the Pacific Northwest Region, where he was responsible for setting corners and posting forest boundaries. He has also served as project surveyor for many light rail projects for TriMet in the Portland, Oregon area and for many road projects for the Western Federal Lands Highway Division of the FHWA.

Resume (9)



Education
AS, Forest Technician, 1974, Central Oregon Community College

Registration
Professional Land Surveyor, Oregon (2526), 1991
Certified Hazardous Waste Specialist, 1997

Years with DEA
30 (1986)

Years with Other Firms
10

Experience:

On-Call Land Surveying Services, for BPA, Oregon and Washington

Mr. Smith serves as a task leader or project surveyor on various projects for BPA. Services typically include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, and high definition laser scanning.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Smith served as a project surveyor (cadastral) for this project, which included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor. He provided field data reduction for mapping, staking checks, and field note checks. He also performed cadastral survey evaluations to calculate search position and reduce field data for ties to found monuments and accessories.

Big Eddy – Knight Transmission Project, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Smith served as project surveyor (cadastral) for this project, which included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 29 miles of primary route and 50 miles of alternative route transmission corridor. He provided reduction of field data for staking checks and field note checks.

Hills Creek – Lookout Point No. 1 Transmission Line Rebuild, for BPA, Lane County, Oregon

Mr. Smith worked as a project surveyor for this effort, providing reduction of field data for mapping, staking checks, and field note checks. He also performed evaluations of cadastral surveys to calculate search position and reduce field data for ties to found monuments and accessories. This project was approximately 26 miles from Hills Creek Reservoir, just west of Oakridge, Oregon, to the Lookout Point Dam near Lowell, Oregon.

N. Sue Tsoi, PLS | Assisting Project Surveyor

Ms. Tsoi is a professional land surveyor with more than 18 years of experience working with surveyors, engineers, and other professionals in the A&E industry. She has managed a variety of projects for public and private clients and agencies from providing scope and budget at the proposal stage to delivering the final product. She is also one of DEA's trained quality managers who provides quality assurance and quality control on projects.

Resume (10)



Education
BS, 1998, Land Surveying, Oregon Institute of Technology
AAS, 1996, Forest Technology (concentration in Land Surveying), SUNY College of Environmental Science and Forestry/Ranger School
AAS, 1995, Liberal Science, SUNY Sullivan County Community College

Registration
Professional Land Surveyor, Oregon (58569 LS), 2004

Professional Affiliations
Professional Land Surveyors of Oregon

Years with DEA
15 (2001)

Years with Other Firms
3

Experience:

Hills Creek – Lookout Point No. 1 Transmission Line Rebuild, for BPA, Lane County, Oregon

BPA acquired a partial transmission line system from Lane County Electric Cooperative in the 1950s. This project runs approximately 26 miles from Hills Creek Reservoir, just west of Oakridge, Oregon, to the Lookout Point Dam near Lowell, Oregon. In 2013, BPA requested DEA to provide field surveying, mapping, and legal description services for approximately 160 access road acquisition documents, and public road approach and crossing permit documents, all in support of the rebuild design for this line. Ms. Tsoi served as a task lead for the resolution of the township, section, and property lines, and provided quality control for the access road right-of-way acquisition documents.

Big Eddy – Knight Transmission Project, Control Network, Design, Boundary, and Cadastral Survey, for BPA, Oregon and Washington

Ms. Tsoi served as a survey technician on the Big Eddy to Knight electrical transmission line project. DEA provided control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 29 miles of primary route and 50 miles of alternative route transmission corridor.

SW 124th Avenue Extension – SW Tualatin–Sherwood Road to SW Grahams Ferry Road, for Washington County, Oregon

Washington County proposed to improve SW 124th Avenue from SW Tualatin–Sherwood Road to SW Grahams Ferry Road as part of the Washington County Road Improvements. Ms. Tsoi was project surveyor for the right-of-way acquisition. She provided legal descriptions and exhibits for over 75 parcels for this project.

Brookwood – TV Highway to E. Main Street, for Washington County, Oregon

Washington County proposed to improve Brookwood Avenue from just north of Tualatin Valley Highway (TV Highway) to the E. Main Street/Baseline Road intersection with Brookwood Avenue as part of the Washington County Major Streets Transportation Improvement Program 3b Next Steps program. Ms. Tsoi was project surveyor for the right-of-way acquisition, and provided legal descriptions and exhibits for over 100 parcels.

Henry Hagg Lake/Scoggins Dam Project, for Clean Water Services, Washington County, Oregon

As a subconsultant to Universal Field Services, Inc., DEA provided horizontal control to establish property lines of 17 properties within 11 sections for this Clean Water Services project. Ms. Tsoi resolved property and section lines, and provided legal descriptions and exhibits for acquisitions and easements.

Gilbert J. Laas, PLS, CFedS | Assisting Project Surveyor

Mr. Laas has 19 years of experience in both the public and private sector performing on survey projects. He specializes in subdivision and official maps of record, and has managed a variety of survey-related projects such as ALTA, topographic, boundary, condominium, plats, record drawings, short plats, binding site plans, and lot line adjustments. Mr. Laas has extensive knowledge concerning the laws, regulations, and requirements of local municipalities and government agencies that deal with survey-related projects. He is responsible for taking field information collected by the field crews and processing it into working base maps by using programs such as LGO, LISCAD, and AutoCAD. He also has worked extensively in blending aerial photogrammetry data with conventional survey and GPS technology. Mr. Laas is an associate with DEA, a registered professional land surveyor in Washington State, and a Certified Federal Surveyor.

Resume (11)



Education
BA, Geography, 1995, University of Oregon

Registrations
Professional Land Surveyor, Washington (42674), 2006
Certified Federal Surveyor (1382), 2010

Affiliations
LSAW – Former NW Chapter President

Years with DEA
18 (1998)

Year with Other Firms
1

Experience:

SR 20/Cook Road Extension and Roundabouts, for WSDOT, Sedro-Woolley, Washington
This project involved design of an extension and realignment to improve local and regional traffic operations on both SR 20 and Cook Road. It included two new roundabouts and two traffic signal modifications. The project was federally funded and designed according to WSDOT requirements. The development of 30% plans in the first 45 days of the project to meet the Transportation Improvement Board (TIB) grant request deadline was also a critical project milestone. Mr. Laas served as a project surveyor, and assisted in the topographic survey for project design, right-of-way mapping, and legal descriptions for right-of-way conveyances.

La Conner Marina Binding Site Plan, for the Port of Skagit County, Skagit County, Washington
Mr. Laas served as survey project manager providing land surveying services to complete the binding site plan for the Port of Skagit County. Services included document review, checking and updating water and wastewater easement legal descriptions and exhibit maps, and setting approximately 170 markers identifying the corners of the proposed plan. DEA also provided detailed as-built information for select wastewater and storm drain underground lines based upon underground camera work performed by a subconsultant.

US 2 East Main Street – Old Owen Road Intersection Improvements, for the City of Monroe, Washington
DEA contracted with the city to provide intersection design and traffic signal improvements on this urban, five-lane, principal arterial State Route. Project elements included Americans with Disabilities Act (ADA)-compliant pedestrian facilities, adding an exclusive right-turn lane, improving the existing intersection angle, and eliminating the existing alignment offset. As project surveyor, Mr. Laas participated in preparation of a topographic base map, right-of-way mapping, and legal descriptions for right-of-way conveyances.

Tjerne Place Extension, Chain Lake Road to Woods Creek Road, for the City of Monroe, Washington
DEA surveyors are currently providing a topographic survey, right-of-way determination, and legal descriptions for approximately 1,000 feet of new roadway and sidewalks on Tjerne Place for the city. The project will provide an alternate east-west route to the highly congested US 2 and will provide added access to the growing North Kelsey Development area. This project is principally funded with a grant from the TIB. Mr. Laas served as a project surveyor for this effort.

John C. "Jay" Bentley, PLS, CFedS | Assisting Project Surveyor

Mr. Bentley is a project surveyor with DEA. He has over 36 years of experience in the surveying industry, with 12 of those years spent with the U.S. Department of Agriculture Forest Service. He has extensive experience in all types of surveying, project management, leadership, and mentoring. His key strengths include GPS control, construction, topographic, and boundary surveys. He is an expert in records research, analyzing complex survey projects, and resolving land dispute issues. His field surveying skills include records of survey, cadastral surveys, GLO and BLM retracements, and GPS surveys. Mr. Bentley regularly manages field crews, instructing them in proper field procedures.

Resume (12)



Education
AAS, Forestry / Surveying, Paul Smith's College, New York

Registration
Professional Land Surveyor, California (7223), 1996; Washington (29268), 1992; Oregon (2656), 1994; Idaho (7689), 1994; Montana (12253), 1995
Certified Federal Surveyor, CFedS (1163), 2008

Years with DEA
4 (2012)

Years with Other Firms
32

Experience:

I-5 Title Certification Services, for BPA, Oregon and Washington

On behalf of BPA, Mr. Bentley reviewed survey documents consisting of plats, record maps, legal descriptions, and exhibits delivered by outside survey consultants. He certified that the documents were prepared according to BPA's standards, and met state and federal regulations. The certification process consisted of using a standardized checklist for specific documents that has the client requirements, the state requirements, and any federal requirements, for that particular type of document. He offered recommendations to enhance the document preparation process to eliminate errors and cut preparation times.

Various Survey Tasks, for the Skokomish Tribal Nation, Washington

With a previous firm, Mr. Bentley performed various survey tasks in support of the Skokomish Tribal Nation. Many of these tasks involved the placement of tribal lands into trusts, use of existing surveys to provide title certificates, and the review of current title reports. The Land Description Review (LDR) and Chain of Surveys (COS) certificates were prepared, and surveys were performed to monument the corners of the property. Data was presented to the Bureau of Land Management (BLM) for its review and approval. Upon approval, the certificates were sent to the BIA agency office and the Record of Survey recorded at the county.

On-Call Surveying and Map Checking Services, for the City of Pasadena, California

DEA is providing on-call surveying and map checking services for the city's planning and public works departments. As a part of this on-call contract, DEA is providing the city with legal descriptions and plats for various historic and redevelopment districts, utility easements, street dedications and vacations, boundary survey calculations for various roadway projects, and map and legal description checking. Mr. Bentley is serving as project surveyor for this project.

Mid-City Bus Rapid Transit (BRT) Route Improvements, for San Diego Association of Governments, San Diego, California

As project surveyor, Mr. Bentley assisted in providing land surveying services to support project design for this 10-mile BRT project. DEA land surveyors established horizontal and vertical control to support aerial topographic mapping of the project limits extending from the intersection of Park Boulevard and Robinson Avenue, along Park Boulevard to El Cajon Boulevard, then along El Cajon Boulevard to College Avenue, and ending at the intersection of College Avenue and Soria Drive.

Douglas E. Malin | Survey Office Technician

Mr. Malin is a survey technician at DEA. His responsibilities include analyzing data collected by conventional survey and scanned data, and developing plan mapping, contours, three-dimensional views, profiles, cross-sections, and volume calculations using various software packages. He has over 30 years of CADD experience. Mr. Malin wrote the national AT&T drafting standards manual and was lead drafter for over 500 miles of telecommunications projects. He has spent five years as a senior technician in the DEA Marine Services Division, and has years of experience conducting civil drafting of municipal and private streets and housing developments survey plats, and structural drafting of bridges, buildings, marina dock systems, and fixed piers.

Resume (13)



Education
BS, Industrial Technology, 1986, Western Washington University

Registration/Certification
U.S. Merchant Marine
1998 Certified Coastal Oceanographics Hypack
1999 Certified in CARIS Hydrographic

Years with DEA
26 (1990)

Years with Other Firms
4

Experience:

Castle Rock – Sundial 500kV Transmission Line Project, for BPA, Castle Rock, Washington, to Troutdale, Oregon
Mr. Malin is providing lead mapping services for BPA and BPA's Owner's Engineer to design and acquire rights to construct an 80-mile power transmission corridor and two substations. His tasks include assembling a master base map from topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. The map is used to produce Certified Mile Maps for corridor and access road acquisition and Records of Survey for State of Washington Department of Natural Resources (DNR). GIS shape files for acquisitions are also made.

Big Eddy – Knight Transmission Project, for BPA, The Dalles, Oregon, to Goldendale, Washington
Mr. Malin provided lead mapping services to design and acquire rights to construct a 29-mile power transmission corridor, associated access roads, and the Knight substation. His tasks included assembling a master base map from topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map was used to produce Certified Mile Maps for corridor and access road acquisition, DNR Records of Survey, exhibits for condemnation, access roads, crossing permits, and public road approaches. GIS shape files for acquisitions were also made.

Schultz – Wautoma 500kV Transmission Line Project, for BPA, Kittitas, Grant, and Benton Counties, Oregon
Mr. Malin provided lead mapping services for this 63-mile power transmission corridor, associated access roads, and substations. His tasks included assembling a master base map from the topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map was used to produce Certified Mile Maps for corridor and access road acquisition, Records of Survey for State of Washington Department of Natural Resources, exhibits for access roads, crossing permits, and public road approaches. GIS shape files for all acquisitions were also made.

Keeler – Tillamook Transmission Line Rebuild, for BPA, Washington and Tillamook Counties, Oregon
Mr. Malin provided lead mapping services for this 60-mile power transmission corridor and associated access roads. His tasks included assembling a master base map from the topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map was used to produce Hybrid plan and profile maps, which were then used to produce Certified Mile Maps for corridor and access road acquisition, and exhibits for access roads, crossing permits, and public road approaches. GIS shape files for all acquisitions were then made.

Edita Boguslawski | Survey Office Technician

Ms. Boguslawski has more than 20 years of experience in design and drafting using AutoCAD and AutoCAD Civil 3D, and MicroStation drafting software. She has also designed roadway projects and prepared construction plans using Softdesk and Eagle Point design software. She has worked on many grading design and Intergraph MicroStation projects with DEA. Her experience includes the preparation of utility base maps, grading, storm drainage, waterline, and sewer design, and pump station projects. She has worked on many public works transportation projects, preparing construction plans that conform to each agency's particular design and drafting standards.

Resume (14)



Education
BA, Education, Czech Republic, 1982

Training
AutoCAD Civil 3D, 2012
Eagle Point -- ROADCALC, 1998
Softdesk's CAD Overlay, 1998
Package (Imaging)
AutoCAD/DCA, Intergraph
MicroStation/InRoads, Highway
Drainage Design, 1991-94, Greiner Pacific
Surveying Seminar, 1990, Santa Ana College

Years with DEA
21 (1995)

Years with Other Firms
1

Experience:

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary, and Cadastral Survey, for BPA, Oregon and Washington

Ms. Boguslawski serves as a survey technician for this electrical transmission line project. DEA's services include control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor. She has prepared foreign crossings exhibits, researched private versus public road crossings, and imported foreign crossings into the base map utilizing PLS-CADD data. Ms. Boguslawski has also assisted in preparation of Record of Survey drawings.

Big Eddy – Knight Transmission Project, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Ms. Boguslawski served as a survey technician assisting with the creation of mile maps for the Big Eddy to Knight electrical transmission line project. DEA's services included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 29 miles of primary route and 50 miles of alternative route transmission corridor.

Keeler – Tillamook No. 1 Rebuild Project, for BPA, Washington and Tillamook Counties, Oregon

DEA provided surveying services to upgrade this 58-mile wood pole transmission line in Western Oregon, from Keeler substation in Hillsboro through Forest Grove substation to Tillamook substation. DEA's tasks include establishing survey control, verifying and supplementing LiDAR data provided by BPA, locating proposed access road alignments and affected property boundaries, preparing acquisition documents for approximately 90 parcels, revamping the existing 1950s plan maps to include new design and new acquisitions, preparing new profile maps using s PLS-CADD design model, and staking structures in new locations. Ms. Boguslawski served as a survey technician for this project, and her tasks included assisting with the production of Hybrid plan and profile maps and Access Road Acquisition Request exhibits.

Hills Creek – Lookout Point No. 1 Transmission Line Rebuild, for BPA, Lane County, Oregon

This project was approximately 26 miles and stretched from Hills Creek Reservoir, just west of Oakridge, Oregon, to the Lookout Point Dam near Lowell, Oregon. Utilizing data from a PLS-CADD model, Ms. Boguslawski exported profile design line work into a MicroStation design file, and labeled the new design using information from the L-Line report, structure list, sag instructions, and crossing report. She created and updated the crossing report using data from a PLS-CADD model, and then she imported and labeled foreign crossings under the transmission line.

Liam D. Madigan | Survey Office Technician

Mr. Madigan is a survey technician with over 18 years of experience providing technical support for geomatics and mapping projects. His project experience includes preparing design surveys, topographic surveys, river surveys, subdivision plats, right-of-way maps, and other Records of Survey.

Resume (15)



Education
General Studies, 1998-2000, Orange Coast College

Software Proficiency
AutoCAD, MicroStation v8i, InRoads, LISCAD, Cyclone, Trimble Business Center, PLS-CADD, ArcMap

Years with DEA
10 (2006)

Years with Other Firms
8

Experience:

Fiber Optic Location and Mapping, for BPA, Various Locations in Oregon and West Washington

Mr. Madigan served as a senior CAD operator on this project providing surveys for as-built documentation of fiber optic facilities for BPA's Mapping and GIS groups. DEA used specialized equipment to locate underground utilities including "OMNI Ball" cable markers at ten or more substations and along some lines between substations. DEA surveys were tied to other existing facilities, showing the relationship to substation control, fences, property corners, roads, etc. The data was added to BPA's Enterprise GIS system.

Castle Rock – Sundial 500kV Transmission Line Project, for BPA, Castle Rock, Washington to Troutdale, Oregon

As a survey technician on this project, Mr. Madigan is providing CADD support services. The project involves a proposed more than 80-mile 500kV transmission line located primarily in southwest Washington, in Clark and Cowlitz Counties.

Hybrid Mapping, for BPA, Oregon

On this project, which involved updating transmission line plan and profile maps, Mr. Madigan performed services to create approximately 150 hybrid plan and plan/profile mile maps from grayscale images.

Big Eddy – Knight Transmission Project, for BPA, The Dalles, Oregon, to Goldendale, Washington

Mr. Madigan provided survey technician services for BPA and its Owner's Engineer to design and acquire rights to construct a 29-mile power transmission corridor, associated access roads, and the Knight substation. His tasks included assembling a master base map from the topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map formed the basis for producing Certified Mile Maps for corridor and access road acquisition, Records of Survey for State of Washington Department of Natural Resources, condemnation exhibits, access roads, crossing permits, and public road approaches. GIS shape files for all acquisitions were also made.

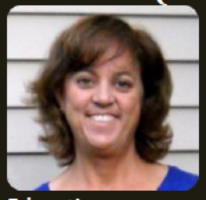
Keeler – Tillamook Transmission Line Rebuild, for BPA, Washington and Tillamook Counties, Oregon

Mr. Madigan provided survey technician services for this 60-mile power transmission corridor and associated access roads. His tasks included assembling a master base map from the topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map was used to produce Hybrid plan and profile maps, which were then used to produce Certified Mile Maps for corridor and access road acquisition, and exhibits for access roads, crossing permits, and public road approaches. GIS shape files for all acquisitions were also made.

Lisa M. Campbell | Survey Office Technician

Ms. Campbell is a survey technician at DEA. Her responsibilities include analyzing data collected by conventional survey and scanned data, and developing plan mapping, contours, three-dimensional views, profiles, cross-sections, and volume calculations using various software packages. She has over 25 years of CADD experience. Ms. Campbell is responsible for utility locations for base mapping. She spent time as a senior technician in the DEA Marine Services Division, and has years of experience conducting civil drafting of municipal and private streets and housing developments survey plats, and structural drafting of bridges, buildings, marina dock systems, and fixed piers. Ms. Campbell's computer skills include MicroStation, InRoads, and AutoCAD. She is certified by DEA as a quality manager, and has performed in that role on many survey projects.

Resume (16)



Education
BLA, Landscape Architecture, 1987, Utah State University

Years with DEA
25 (1990)

Years with Other Firms
0

Experience:

Castle Rock – Sundial 500kV Transmission Line Project, for BPA, Castle Rock, Washington, to Troutdale, Oregon

Ms. Campbell is providing mapping services for BPA and its Owner's Engineer to design and acquire rights to construct an 80-mile power transmission corridor and two substations. Her tasks include assembling a master base map from the topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map is used to produce Certified Mile Maps for corridor and access road acquisition and Records of Surveys for State of Washington Department of Natural Resources. GIS shape files for all acquisitions are then made.

Big Eddy – Knight Transmission Project, for BPA, The Dalles, Oregon, to Goldendale, Washington

Ms. Campbell assisted in mapping services for BPA and its Owner's Engineer to design and acquire rights to construct a 29-mile power transmission corridor, associated access roads, and the Knight substation. Her tasks included assembling a master base map from the topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map was used to produce Certified Mile Maps for corridor and access road acquisition, Records of Survey for State of Washington Department of Natural Resources, exhibits for condemnation, access roads, crossing permits, and public road approaches. GIS shape files for all acquisitions are then made.

Keeler – Tillamook Transmission Line Rebuild, for BPA, Washington and Tillamook Counties, Oregon

Ms. Campbell assisted in providing mapping services for this 60-mile power transmission corridor and associated access roads. Her tasks included assembling a master base map from topographic and cadastral surveys, LIDAR data, L-Line corridor information, and property lines. This map was used to produce Hybrid plan and profile maps, which were then used to produce Certified Mile Maps for corridor and access road acquisition, and exhibits for access roads, crossing permits, and public road approaches. GIS shape files for all acquisitions were also made.

Substation Topographic Surveys, Base Line Modernization Surveys, and Records of Survey, for BPA, Washington and Oregon

Ms. Campbell provided topographic and cadastral mapping of many substations. GIS shape files of substation boundaries are also produced.

Timothy A. Schweitzer, LSIT | Survey Office Technician

Mr. Schweitzer has over 28 years of experience and works closely with survey staff and designers to produce finished drawings, base maps, and terrain models, which includes processing raw survey data and combining it with record data and other materials. Mr. Schweitzer is experienced in a range of engineering fields and graphic documentation, including civil engineering, telecommunications, and land survey. He is also familiar with a broad range of survey computer programs including AutoCAD Civil 3D, StarNet, and LISCAD.

Resume (17)



Education
AS, AutoCAD and Architectural Design, 1990, Portland Community College
SoftDesk Civil Design, 1994, Clackamas Community College
Plane and Route Surveying, 1995Portland Community College

Trimble Geomatics Office (TGO), certified

Registration
Land Surveyor-in-Training, Oregon (1611), 1997

Professional Affiliations
Professional Land Surveyors of Oregon

Years with DEA
25 (1991)

Years with Other Firms
3

Experience:

Keeler – Tillamook No. 1 Rebuild Project, for BPA, Washington and Tillamook Counties, Oregon
Mr. Schweitzer served as a survey technician on this project and assisted in providing surveying services to upgrade a 58-mile wood pole transmission line in western Oregon. Survey tasks included establishing survey control, verifying and supplementing LiDAR data provided by BPA, locating proposed access road alignments and affected property boundaries, preparing acquisition documents for approximately 90 parcels, revamping the existing 1950s plan maps to include new design and new acquisitions, preparing new profile maps using a PLS-CADD design model, and staking structures in new locations.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary, and Cadastral Survey, for BPA, Oregon and Washington
Mr. Schweitzer served as a survey technician providing note checking for this project. DEA's services included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for over 80 miles of primary route and 150 miles of alternative route transmission corridor.

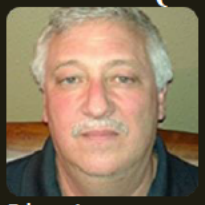
Carty Lateral Natural Gas Pipeline FERC Application, Boundary Resolution, and Cadastral Survey, for TransCanada, Boardman, Oregon
Mr. Schweitzer served as a survey technician for the proposed Boardman to Heppner natural gas pipeline project that will serve Portland General Electric's proposed natural gas generation plant. DEA provided preliminary route mapping, cadastral survey, and GIS exhibit maps for FERC permitting of a 30-mile route. The deliverables included cadastral, boundary, topographic maps, and shape files in AutoCAD and GIS formats.

Carty Lateral Natural Gas Pipeline As-Built Survey, for TransCanada, Boardman, Oregon
Mr. Schweitzer served as a survey technician for the Boardman to Heppner natural gas pipeline project that will serve Portland General Electric's proposed natural gas generation plant. DEA provided as-built mapping and a data base of all features of the pipeline, including location and depth. The deliverables included as-built drawings and feature data base.

Survey of 'A' Canal, for U.S. Bureau of Reclamation, Klamath Falls, Oregon
As survey technician, Mr. Schweitzer provided surveying support on this Bureau of Reclamation project. The project involved investigating land record availability, monumentation status of 'A' Canal rights-of-way from the headworks to the C-Drop, and development of a survey work plan for a Level 1 survey.

James A. Hagner | Survey Office Technician

Resume (18)



Education
A.S., Civil Engineering Technology, 2004, Mt. Hood Community College

Years with DEA
3 (2013)

Years with Other Firms
10

Mr. Hagner has 13 years of experience as a survey and engineering technician utilizing ArcMap, AutoCAD, MicroStation, and PLS-CADD software. He has worked primarily in the office, but he has also been part of a field crew. He finds that the field experience provides a better understanding of the work flow as information is transferred from field to office. His primary responsibilities at DEA include analyzing survey data and incorporating it into the above-mentioned software, which is used to prepare Records of Survey, topographic surveys, base maps, access road acquisition exhibits, Certified Mile Maps, and GIS shape files.

Experience:

Ashe – Marion No. 2 Insulator Project, for BPA, Wasco, Clackamas and Marion Counties, Oregon
Mr. Hagner provided lead mapping services for BPA on a 74-mile, 500kV, double-circuit transmission line for the purpose of maintaining and replacing aging tower and wood pole transmission lines. His tasks included using LiDAR data and field surveyed data to prepare a base map, drafting exhibits and Certified Mile Maps, and creating GIS shape files for the purpose of Land Acquisition Request and Access Road Acquisition Requests.

Big Eddy – Knight Transmission Project, for BPA, Wasco County, Oregon and Klickitat County, Washington
Mr. Hagner provided mapping services for BPA on a 29-mile, 500kV transmission line for the purpose of designing, and acquiring rights and permits to construct the transmission line. His tasks included assisting in the preparation of the base map, drafting of exhibits and Certified Mile Maps, and creating GIS shape files for the purpose of Land Acquisition Request and Access Road Acquisition Requests.

Bonneville PH1 – Hood River No. 1, Hood River County, Oregon
Mr. Hagner provided mapping services for BPA on a 24-mile, 115kV, single-circuit transmission line for the purpose of maintaining and replacing aging transmission lines. His tasks include using LiDAR data and field surveyed data to prepare a base map, crossing report, and LiDAR confidence report.

Castle Rock – Sundial 500kV Transmission Line Project, for BPA, Castle Rock, Washington, to Troutdale, Oregon
Mr. Hagner is providing mapping services for BPA on an 80-mile, 500kV transmission line project for the purpose of designing and acquiring rights to construct a transmission line and two substations. His tasks include assistance in preparing the base map and the private and State of Washington Department of Natural Resources Records of Survey.

Covington Substation Topographic Survey Phase 2, for BPA, King County, Washington
Mr. Hagner provided mapping services for BPA for a 48-acre area of the Covington Switchyard for the purpose of designing a new drainage system and infiltration areas. His tasks include using field surveyed data to prepare a topographic base map.

Hills Creek – Lookout Point Transmission Line, for BPA, Oregon
Mr. Hagner provided mapping services for BPA on a 26-mile transmission line system. His tasks included assistance in preparing the base map and creating Certified Mile Maps for the purpose of Land Acquisition Request and Access Road Acquisition Requests.

Matthew Savage | Survey Office Technician

Mr. Savage has 13 years of experience and is very familiar with topographic and boundary surveys, as well as construction staking. He has extensive experience in the use of Leica HDS laser scanners and mobile laser scanning systems, and subsequently, with LiDAR point cloud data. He also has some party chief experience. He has had the latest training in the software necessary to reduce this data. Software experience includes AutoCAD Civil 3D, MicroStation V8i, Leica Cyclone, Revit, Terrascan, and PLS- CADD. Mr. Savage is knowledgeable in the use of Leica Total Stations as well as Leica GPS equipment for Static and RTK data collection. Mr. Savage's primary focus is laser scanning and LiDAR data.

Resume (19)



Education
AAS, Geographic Information Systems

Software Proficiency
ArcMap
AutoCAD
MicroStation V8i
3D Modeling Software
Leica Cyclone
Terrascan

Hardware Proficiency
Titan Mobile Scanning Operator
Leica HDS 3000, 6000, C10
Leica Scan Station 2
Leica GPS

Years with DEA
10 (2006)

Years with Other Firms
3

Experience:

Big Eddy – Knight 500kV Electrical Transmission Line, Control Network, Design, Boundary, and Cadastral Survey, for BPA, Oregon and Washington
Mr. Savage served as an office survey technician for the Big Eddy to Knight electrical transmission line project. DEA's services included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 29 miles of primary route and 50 miles of alternative route transmission corridor. Mr. Savage's primary duties included performing laser scan surveys and generating topographic maps and DTMs from the scan data. He also performed QA/QC checks between client-provided LiDAR data and field-collected terrestrial data.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary, and Cadastral Survey, for BPA, Oregon and Washington
DEA is providing a control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor for the I-5 Corridor Reinforcement electrical transmission line project. Mr. Savage worked as a survey technician for this effort both in the field and in the office, performing topographic surveys, records of survey, laser scan surveys, base maps, DTMs, and LiDAR analysis. He also assisted GIS technicians in managing and generating GIS data for a large geodatabase for the project.

Keeler – Tillamook No. 1 Rebuild Project, for BPA, Washington and Tillamook Counties, Oregon
DEA provided surveying services to upgrade this 58-mile wood pole transmission line in western Oregon, from Keeler substation in Hillsboro through Forest Grove substation to Tillamook substation. DEA's tasks included establishing survey control, verifying and supplementing LiDAR data provided by BPA, locating proposed access road alignments and affected property boundaries, preparing acquisition documents for approximately 90 parcels, revamping the existing 1950s plan maps to include new design and new acquisitions, preparing new profile maps using a PLS-CADD design model, and staking structures in new locations. Mr. Savage served as a survey technician for this project, and his tasks included performing laser scan surveys and generating topographic maps and DTMs from the scan data. He also performed QA/QC checks between client-provided LiDAR data and field-collected terrestrial data.

Robert V. Johnson, LSIT | Survey Office Technician

Mr. Johnson is a second-generation surveyor with over 26 years of surveying and mapping experience, including 16 years with DEA's Triad Division. His specialties include 3D laser scanning; boundary, topographic, as-built, and ALTA surveys; and construction staking. Mr. Johnson's BS in Business and Economics from Western Washington University gives him insight into the financial aspect behind each project. His upbeat customer service skills are a natural part of his friendly manner.

Resume (20)



Education
BS, Business and Economics, Western Washington University
AutoCAD Release 14 Certification, McNeal & Associates

Registration
Land Surveyor in Training, WA

Professional Affiliation
Land Surveyors' Association of Washington

Software Proficiencies
AutoCAD 2014 and Land Development Desktop
AutoCAD Civil 3D 2014
Carlson Data Collection
Leica Geo Office – GPS Data Processing
Leica Cyclone and CloudWorx – 3D Laser Scanning Data Processing
Global Mapper – LiDAR/GIS Data Processing
Trimble Business Center

Years with DEA (Triad Division)
16 (2000)

Years with Other Firms
10

Experience:

Ruskin Powerhouse, British Columbia, Canada

The Ruskin Powerhouse was constructed in 1930 and is scheduled to undergo a major overhaul and seismic upgrades. Mr. Johnson conducted exterior and interior 3D laser scanning services for MWH Americas, part of the engineering team assigned to the project. After scanning, the individual point clouds were unified into one overall point cloud and geo-referenced to a specific horizontal and vertical datum required by the client. Then, an as-constructed 3D model of portions of the powerhouse was completed, which will be used in the engineering design process. Preparation for the project included negotiating professional service agreements with MWH Americas and with our subconsultant, Epic Scan; creating Safety and Work Plans required by BC Hydro before commencement of the field work; and scheduling both the required safety training and on-site laser scanning, which required complex coordination with a number of parties.

Pike Place Market Redevelopment, Seattle, Washington

During Phase 1 of the $73 million Pike Place redevelopment project, the Hillclimb was to get a much-needed makeover. Mr. Johnson assisted the team that got the effort underway with surveying services for the site structural and infrastructure improvements. The team started by providing construction layout for all shoring elements (i.e., soldier pile walls and micro-pile placement). During construction, we provided monitoring twice a week and continuous monitoring during critical construction phases. Field crews also provided conventional mapping to locate existing features in tight, difficult-to-access areas, as well as grid line layout and wall layout control. Due to the age of the existing structural components and uncertainty of the market's as-built records, Turner Construction asked the team to perform 3D laser scanning surveys of the existing site, assisting in the design and fabrication of critical structural, electrical, and mechanical improvements.

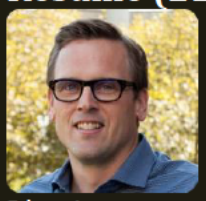
Bellefield Sanitary Sewer Lift Station, Bellevue, Washington

This project involved the performance of a topographic survey of a City of Bellevue lift station site and 2,380 linear feet of major city streets for design of a force main. As survey technician on the project, Mr. Johnson registered and condensed the multiple scans into one scan with a common horizontal and vertical datum; extracted/mined the point cloud data, setting positions and drafting topographic features; and delivered a plan view of the final topographic survey map to client. The laser scanner was used in conjunction with conventional surveying instruments.

Erik Brewster, GISP| GIS Analyst

Mr. Brewster serves as DEA's GIS survey manager. He has over 14 years of experience in managing GIS development and implementation for commercial and government organizations. His experience includes enterprise system architecture design, database and application development, mobile data collection, development and teaching of technical training programs, and business analysis. He holds an MBA from Willamette University, a BS in Environmental Studies and Philosophy from Portland State University, and a certificate in geographic information systems from Portland State University.

Resume (21)



Education
MBA, 2009, Willamette University
Graduate Certificate in Geographic Information Systems, 2004, Portland University
BS, Environmental Studies, Philosophy, 2002, Portland State University

Registration
Certified Geographic Information Systems Professional

Years with DEA
2 (2014)

Years with Other Firms
12

Experience:

I-5 Corridor Reinforcement 500kV Transmission Line, Control Network, Design, Boundary, and Cadastral Survey, for BPA, Oregon and Washington

BPA is proposing an 80-mile 500kV transmission line project located primarily in southwest Washington State near the communities of Camas, Vancouver, Woodland, Kelso, and Castle Rock. Utilizing a mix of GPS, terrestrial, and LiDAR imaging technologies for collecting spatial data, the cadastral fabric developed for this project will be unprecedented within the state. Because of the varied sources of cadastral data, records may be incomplete, piecemeal, and residing in private collections, public works departments, or within court records. In an effort to fully document evidentiary chains, this project has required close collaboration with operations managers of major timber companies, county surveyors, public works directors, GIS specialists, and land surveying professionals to ferret out the existence of land records that were developed before the institution of a survey recording act and that don't reside within the Public Land Survey Office of the Washington Department of Natural Resources. Our exhaustive research and mapping effort in support of this project will result in a cadastral data library that will serve the state of Washington for many years. Mr. Brewster serves as the GIS manager for this project.

Willamette River–Portland Site and Map Historic Riparian, for State of Oregon Department of Justice, Portland, Oregon

DEA performed mapping of riparian lines along the Willamette River from River Mile 12 to the confluence with the Columbia River. The survey included utilizing multi-beam and single-beam sonar for mapping the ordinary low water line and a boat-mounted Riegl laser scanner to map the ordinary high water line. Research included looking at all deed transfers of tide lands to determine ownerships. The final survey was delivered in AutoCAD and GIS formats. DEA is also following this project up with historic mapping over the 12 miles utilizing the GIS data base. Mr. Brewster served as the GIS manager for this project.

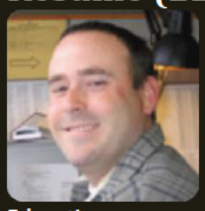
Land Records Management System Evaluation, for the Bureau of Land Management, Oregon

As the technical business analyst, Mr. Brewster interviewed BLM staff from the Oregon Land Records team as part of a bureau-wide evaluation of the Land Records 2000 database (LR2K). The LR2K system is a national database that manages property parcel and right-of-way information for lands managed by the federal government. Information from the national system, built on Oracle technology, is linked to a regional GIS, built on MS SQL Server. The goal of the project was to evaluate the current use of the LR2K database, assess the strengths and weaknesses, and construct a report to guide the future migration towards a more integrated lands status system.

Adam La Plant, PLS | Field Team Coordinator

Mr. LaPlant is a professional land surveyor and project surveyor with over 17 years of experience. He is an expert in GPS fast-static/RTK surveys, GIS analysis, Asset and Inventory Mobile Mapping (AIMM), and mapping. He has been involved in hundreds of projects ranging from small land development sites to large transportation routes, and his experience includes aerial mapping, construction staking, topographic mapping, boundary surveys, small private surveys, large plats, and subdivision surveys. He is also adept in various CAD and GIS programs to develop survey deliverables. Mr. LaPlant's combination of field and office experience enables him to quickly solve issues and provide solutions.

Resume (22)



Education
BA, Geography (Emphasis in GIS), Minor Environmental Studies, 1999, Central Washington University

Registration
Professional Land Surveyor, Washington (49283), 2012

Professional Affiliations
Land Surveyors Association of Washington (LSAW)

Years with DEA
16 (2000)

Years with Other Firms
1

Experience:

Greenwater Reroute Transmission Design Survey, for Puget Sound Energy, King County, Washington

Mr. LaPlant served as project manager responsible for providing categorized LiDAR, boundary survey, control zone survey, and wetland reconnaissance for a Puget Sound Energy route selection project. A combination of mobile scanning, GPS, and conventional equipment was used to complete the task.

Bellingham Substation Survey Support, for Puget Sound Energy, Bellingham, Washington

Mr. LaPlant served as project manager responsible for providing design-level mapping, boundary survey, and categorized LiDAR for a Puget Sound Energy substation rebuild project. A combination of static scanning, GPS, and conventional equipment was utilized to complete the task on this large substation.

GPS Data Collection – Access Roads, for BPA, Snohomish Region, Northwestern Washington

Mr. LaPlant led the survey to map the access roads and related features for the Covington and Snohomish maintenance districts of the BPA Snohomish Region. This includes approximately 1,267 transmission line miles. The object of this project was to utilize GPS to locate and collect all access roads, facilities, and condition information leading to a transmission line corridor and the right-of-way roads leading to each tower. As GPS field technician for the maintenance districts, Mr. LaPlant worked closely with a BPA line person in accessing and mapping all required features. Once all features were collected, he imported the GPS data into ARC GIS to be reviewed and overlaid on existing BPA right-of-way and transmission line coverage. Edits were made and a final GIS coverage was delivered for each district.

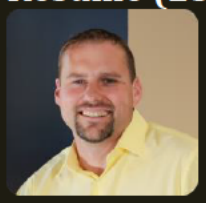
GPS Surveying Services in Olympia Region, for BPA, Washington

DEA was selected by BPA to map the access roads and related features for the Olympia and Chehalis maintenance districts of the BPA Olympia Region. This included approximately 1,300 transmission line miles. The object of this project was to locate and collect with GPS all access roads, facilities, and condition information leading to a transmission line corridor and the right-of-way roads leading to each tower. Mr. LaPlant served as a GPS field technician, working closely with a BPA line person in accessing and mapping all required features. Once all features were collected, Mr. LaPlant imported the GPS data into ARC GIS to be reviewed and overlaid on existing BPA right-of-way and transmission line coverage. Edits were made and a final GIS coverage was delivered for each district.

Duffy D. Haggarty, PLS | Field Team Coordinator

Mr. Haggarty is the survey manager for DEA's Spokane office and has more than 11 years of experience providing land surveying services throughout the Western United States. He is proficient in mobile mapping, terrestrial scanning, sonar and airborne LiDAR data fusion, and data manipulation. He holds a BS degree in Business Administration and has 12 years of information systems management experience. His education and experience allow him to select the most reliable and efficient equipment to meet client and project needs.

Resume (23)



Education
BS, Information Systems, 2002, University of Montana

Registration
Professional Land Surveyor, Washington (52081), 2014
Professional Land Surveyor, Montana (32877), 2014

Years with DEA
2 (2014)

Years with Other Firms
9

Experience:

Rattlesnake to Garrison Crossing T-line, for BPA, Missoula County, Montana

As survey project manager, Mr. Haggarty was instrumental in the successful execution of this approximately 80-mile transmission line survey for BPA. Services included right-of-way retracement and staking of the new alignment. Mr. Haggarty also provided a full Certificate of Survey for the project that was filed with Missoula County. Trimble GPS Static and RTK technology and 3D static laser scanning were utilized for data collection efforts on this project. An OPUS site solution was created to maintain state plane coordinates throughout the power line alignment and staking, and a local ground system was created using a combined scale factor to complete the Certificate of Survey.

Sandpiper Oil Pipeline, for Rooney Engineering – Enbridge (owner), North Dakota to Wisconsin

Mr. Haggarty served as the survey project manager to survey 12 existing and new pump stations throughout this approximately 616-mile pipeline corridor. The proposed pipeline will transfer light crude oil from Enbridge's Beaver Lodge Station, near Tioga, North Dakota, through Clearbrook, Minnesota, to an existing terminal in Superior, Wisconsin. Survey services on the project included detailed site topographic maps, right-of-way retracement, legal descriptions and easements, and Results of Survey document filings. Trimble GPS Static and RTK technology, and 3D static laser scanning technology, were utilized for data collection efforts on this project. An Opus solution was used to create state plane coordinates and was maintained throughout each site.

Various Land Surveying Projects, for NorthWestern Energy, Montana

As survey project manager, Mr. Haggarty performed services for over four years on this on-call surveying contract for NorthWestern Energy. He performed multiple projects at multiple sites throughout Montana. Projects ranged from 230kV transmission line connection to powerhouse dams to pole-to-pole power line scanning and surveying. Mr. Haggarty also performed right-of-way retracement for these same transmission lines. Trimble GPS Static and RTK technology and 3D static laser scanning were utilized for data collection efforts.

I-25 and Arapahoe Topographic Survey and Right-of-Way, for Colorado Department of Transportation, Denver, Colorado

As project manager, Mr. Haggarty oversaw the completion of a topographic survey and right-of-way map for the I-25 and Arapahoe Interchange project for Colorado Department of Transportation. This project was delivered in two phases. The first phase was the topographic survey, which CDOT wanted completed on a fast track basis and done efficiently, without putting personnel into the roadways to collect survey data. DEA utilized the benefits of 3D mobile laser scanning, static laser scanning, and GPS to supplement areas that could not be scanned to not only deliver a complete detailed survey, but also keep personnel out of the roadway. As a result, DEA delivered the project ahead of schedule.

R. David Williams, LSIT | Party Chief

Mr. Williams has 15 years of experience in land surveying and geomatics with expertise in GPS and terrestrial surveys such as topographic mapping, aerial photogrammetry control, construction staking, GPS fast-static/RTK surveys, and boundary control. He has directed a two-person survey crew performing mapping surveys using the 3D laser scanner. Mr. Williams has been working with laser scanning since he began his career and has led field scanning efforts on hundreds of projects ranging in size from over 250,000-square-foot airport facilities to items as small as a tennis shoe. Mr. Williams has performed GPS control and mapping surveys throughout Washington and Idaho for various clients. His ability to think on his feet and anticipate problems makes Mr. Williams a valuable team member.

Resume (24)



Education
BA, Sociology, 1985, Washington State University
AA, Land Surveying, 2001, Renton Technical College

Registration
Land Surveyor in Training (LSIT), Washington (1118), 2010

Years with DEA
15 (2001)

Years with Other Firms
0

Experience:

I-5 Corridor Reinforcement 500 kV Transmission Line Project, for BPA, Southwest Washington and Northwest Oregon

DEA is a subconsultant on this project to HDR Engineering, which serves as the engineering program manager. HDR manages the project under a contract that includes surveying and related services to BPA for transmission lines, substations, communications, access roads, and property acquisition. Mr. Williams serves as a party chief on this 80-mile project.

Seismic Evaluation of Radio/Microwave Control Buildings, for BPA, Washington and Oregon

DEA performed Federal Emergency Management Agency (FEMA)-178 analyses on four of BPA's radio/microwave station control houses. All four were categorized as FEMA Type 15 structures (unreinforced masonry bearing wall buildings). DEA contributed to the report that included descriptions of each building, potential problems, recommendations for improvements, FEMA evaluation sheets, photographs, and calculations. Mr. Williams acted as a party chief for this project.

Stavis Bay Natural Area – Line Posting, for Washington State Department of Natural Resources, Kitsap County, Washington

DEA provided surveying and mapping services associated with the Stavis Natural Resources Conservation Area (NRCA) project. The project site is located on Kitsap Peninsula, Kitsap County, Washington, and is a densely forested site that includes portions of seven sections. DEA located over 50 cadastral monuments needed to calculate the boundary of the NRCA, and also line posted over 8 miles of boundary delineating the boundaries between private lands and the NRCA. During the project, DEA met with many land owners and collected valuable testimony that aided in the location of original monuments of record. Mr. Williams served as a party chief on this project.

Kapowsin and Benbow Survey, for Puyallup Tribe of Indians, Pierce County, Washington

DEA was hired to perform a Certified Federal Surveyor (CFedS) certified boundary survey of over 1,100 acres of tribal lands. DEA researched county, Department of Natural Resources, Tribal, GLO, and U.S. Forest Service records to help find approximately 20 section corner monuments. During this survey, DEA set five monuments at lost corners, using proportioning methods described in BLM's 2009 Manual of Surveying Instruction. Before DEA filed the record of survey with Pierce County, BIA reviewed the survey assuring that it met the CFedS criteria. Mr. Williams served as a party chief on this project.

Ryan K. Smith | Party Chief

Mr. Smith is a survey party chief with DEA. With over 15 years of experience, he has been involved in virtually every type of survey including boundary, topographic, design, control, ALTA, and construction surveys. He is also adept in providing laser scanning field survey services. His recent project experience includes BPA surveying tasks including topography and setting monuments for the Tacoma substation and the I-5 Corridor Reinforcement project.

Resume (25)



Certifications
PBA Certified

Years with DEA
15 (2001)

Years with Other Firms
0

Experience:

I-5 Corridor Reinforcement 500 kV Transmission Line Project, for BPA, Southwest Washington and Northwest Oregon

DEA is a subconsultant on this project to HDR Engineering, which serves as the engineering program manager. HDR Engineering manages the project under a contract that includes surveying and related services to BPA for transmission lines, substations, communications, access roads, and property acquisition. Mr. Smith served as a party chief on this project.

Northwood Ridge Subdivision Survey, for Pacific Ridge Homes, Inc., Bothell, Washington

Mr. Smith served as a party chief on this boundary and topographic survey for the Northwood Ridge subdivision located in Bothell, Washington, for Pacific Ridge Homes, Inc. This proposed subdivision consists of approximately 44 lots on 9.87 acres and is located at 4312 180th Street SE. Other survey-related services include tree location exhibit for tree preservation, construction staking, and preparation of the as-builts and final plat. The property was used by two single-family homes and is primarily wooded with a wetland located along the southern boundary.

Tambark Creek Park Survey, for Snohomish County Parks and Recreation Department, Snohomish County, Washington

DEA provided engineering and surveying services to assist the Snohomish County Parks and Recreation Department to procure water and sewer service for this 40-acre facility. As party chief, Mr. Smith provided surveying services on this project. Services included providing topographic base mapping and boundary verification for the water line and sanitary sewer design plans.

Gateway Pacific Terminal, Whatcom County, Washington

As party chief, Mr. Smith assisted in a topographical survey of approximately 1,500 acres of densely forested land and wetlands for use in the preliminary and final design of the Gateway Pacific Terminal in northwestern Washington. An Environmental Impact Statement is currently being performed for the project, which, if completed, will become a highly efficient terminal for U.S. producers to export dry bulk commodities to Asian markets.

Stavis Bay Natural Area – Line Posting, for Washington State Department of Natural Resources, Kitsap County, Washington

DEA provided surveying and mapping services associated with the Stavis Natural Resources Conservation Area (NRCA) project. The project site is located on Kitsap Peninsula, Kitsap County, Washington, and is a densely forested site that includes portions of seven sections. As party chief, Mr. Smith assisted in the location of over 50 cadastral monuments needed to calculate the boundary of the NRCA and also line posted over 8 miles of boundary delineating the boundaries between private lands and the NRCA. During the project, DEA met with many land owners and collected valuable testimony that aided in the location of original monuments of record.

Deane W. Blair, LSIT | Party Chief

Mr. Blair has extensive experience as a project manager, survey manager, and field party chief. His professional background includes more than 32 years of expertise in boundary resolution; subdivision and condominium projects; and hydrographic, topographic, and construction surveying. Mr. Blair has completed the BLM advanced cadastral survey workshop, given annually in Tucson, Arizona, and finished number one among all the participants that year.

Resume (26)



Education
BS, Forestry Engineering, 1978, Oregon State University

Registration
Land Surveyor in Training

Presentations
Speaker, Oregon Mortgage Bankers Association: 1998 Panel Discussion on Lot Line Adjusting, Partitioning, and Platting

Years with DEA
26 (1984 & 2005)
**(Rehire 2005)

Years with Other Firms
6

Experience:

On-Call Land Surveying Services, for BPA, Oregon and Washington

Mr. Blair serves as a field survey technician on various projects for BPA. Services typically include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, and high definition laser scanning.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Blair served as a field survey technician providing note checking for the I-5 Corridor Reinforcement electrical transmission line project. DEA's services include control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor.

Big Eddy – Knight Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Blair served as a field survey technician providing field data collection tasks for the Big Eddy to Knight electrical transmission line project. DEA's services included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 29 miles of primary route and 50 miles of alternative route transmission corridor.

Carty Lateral Natural Gas Pipeline FERC Application, Boundary Resolution, and Cadastral Survey, for TransCanada, Boardman, Oregon

Mr. Blair served as a field survey technician for the proposed Boardman to Heppner natural gas pipeline project that will serve Portland General Electric's proposed natural gas generation plant. DEA provided preliminary route mapping, cadastral survey, and GIS exhibit maps for FERC permitting of a 30-mile route. The deliverables included cadastral, boundary, topographic maps, and shape files in AutoCAD and GIS formats.

Snohomish County Asset Inventory Mobile Mapping, for Snohomish County, Washington

Mr. Blair served as a field survey technician collection mobile data on this project which involved the collection of 1,600 miles of road features on behalf of the public works department of Snohomish County. DEA was responsible for collecting roadway attributes, pavement markings, above-ground utilities, signs, guardrails, jersey barrier, planter strips, retaining walls, curb, gutter, sidewalk, and signals.

Chad E. Nelson, LSIT | Party Chief

Mr. Nelson has 20 years of experience as a field surveyor. His experience includes hydrographic, GPS, boundary, topographic, control, right-of-way, and construction surveying on both private and public sector projects. Mr. Nelson is proficient using Leica and other field survey equipment. He also has some experience in construction inspection.

Resume (27)



Registration
Land Surveyor-in-Training (61418LSI), Oregon, 2002

Professional Expertise
Boundary, construction, and mapping using Trimble 5700 and 5800 and Leica RX1250 GPS, Trimble S6 and 5600 robotic total stations, Leica (1103, 1201, 1800 and 2002), AutoCAD (Eagle Point) and various Wild levels.

Years with DEA
16 (1996 & 2009)
** rehire

Years with Other Firms
4

Experience:

On-Call Land Surveying Services, for BPA, Oregon and Washington

Mr. Nelson serves as a field survey technician on various projects for BPA. Services typically include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, and high definition laser scanning.

Keeler – Tillamook No. 1 Rebuild Project, for BPA, Washington and Tillamook Counties, Oregon

DEA provided surveying services to upgrade this 58-mile wood pole transmission line in western Oregon, from Keeler substation in Hillsboro through Forest Grove substation to Tillamook substation. DEA's tasks included establishing survey control, verifying and supplementing LiDAR data provided by BPA, locating proposed access road alignments and affected property boundaries, preparing acquisition documents for approximately 90 parcels, revamping the existing 1950s plan maps to include new design and new acquisitions, preparing new profile maps using a PLS-CADD design model, and staking structures in new locations. Mr. Nelson served as a field survey technician for this project.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Nelson served as a field survey technician providing note checking for the I-5 Corridor Reinforcement electrical transmission line project. DEA's services include control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor.

Big Eddy – Knight 500kV Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Nelson served as a field survey technician providing field data collection tasks for the Big Eddy to Knight electrical transmission line project. DEA's services included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 29 miles of primary route and 50 miles of alternative route transmission corridor.

Carty Lateral Natural Gas Pipeline FERC Application, Boundary Resolution, and Cadastral Survey, for TransCanada, Boardman, Oregon

Mr. Nelson served as a field survey technician for the proposed Boardman to Heppner natural gas pipeline project that will serve Portland General Electric's proposed natural gas generation plant. DEA provided preliminary route mapping, cadastral survey, and GIS exhibit maps for FERC permitting of a 30-mile route. The deliverables included cadastral, boundary, topographic maps, and shape files in AutoCAD and GIS formats.

Joseph J. Gigliotti | Party Chief

Mr. Gigliotti is a senior party chief and has been employed by DEA for more than 39 years. He is skilled in conducting bank protection surveys, floodplain surveys, and cadastral surveys, as well as engineering design and construction surveys.

Resume (28)



Certifications
Certified HAZWOPER since 1992
First Aid
E-Railsafe
BNSF Railroad Safety

Years with DEA
39 (1977)

Years with Other Firms
0

Experience:

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Gigliotti served as a senior party chief on the I-5 Corridor Reinforcement electrical transmission line project. DEA's surveying services included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor.

Hills Creek – Lookout Point Transmission Line, for BPA, Lane County, Oregon

BPA acquired a partial transmission line system from Lane County Electric Cooperative in the 1950s. This project runs approximately 26 miles from Hills Creek Reservoir, just west of Oakridge, Oregon, to the Lookout Point Dam near Lowell, Oregon. In 2013, BPA requested DEA to provide field surveying, mapping, and legal description services for approximately 160 access road and public road approach acquisition documents. These include documents for the U.S. Forest Service (Willamette National Forest), U.S. Army Corps of Engineers, UPRR, various private lands, and timberland companies. Mr. Gigliotti served as a party chief on this project.

Portland International Airport Runway 10R-28L Pavement Mapping, for the Port of Portland, Oregon

As a senior survey party chief, Mr. Gigliotti was tasked with data collection efforts to map the south runway at Portland International Airport. This was accomplished by utilizing the TITAN® mobile laser scanning system in conjunction with other traditional methods to map pavement areas, utilities, and directional signage. The mapping was done in preparation for a paving project to encompass the main south runway and portions of Taxiways B and C. DEA completed the collection phase of the project over the course of two nights with the assistance of Port Operations. DEA staff involved with the project was subject to extensive federal background checks due to their presence on the airfield. Final deliverables were held to high levels of accuracy and precision because of FAA-mandated tolerances on international runways.

Troutdale Reynolds Industrial Park, for the Port of Portland, Oregon

Mr. Gigliotti served as a senior survey party chief overseeing a variety of surveying services for the Troutdale Reynolds Industrial Park. DEA has completed numerous survey tasks for the project, including topographic surveying, boundary surveying, as-built survey, and QA/QC surveying during construction. The industrial park is a 454-acre parcel within the City of Troutdale and Multnomah County jurisdictions. The Port of Portland purchased land owned by Reynolds Metals Company. The property lies between Troutdale Airport and the Columbia River to the north, and is bounded by the Sandy River to the east.

Keith Lyman, EIT | Party Chief

Mr. Lyman is a field survey technician with over eight years of experience. This experience includes internships at various firms, including DEA, where he spent two summers as part of a survey field crew. He has worked under the direction of professional land surveyors, and has operated and is proficient with both Trimble and Leica total stations and GPS equipment. Mr. Lyman routinely works on contracts for BPA that entail mapping access roads, editing raw data, and transmitting finalized reports to project managers at DEA and BPA.

Resume (29)



Education
BS, Civil Engineering, 2009,
Montana State University
Basic Officer Leadership Course,
USACE FT Leonard Wood MO, 2013

Certifications
Engineer-In-Training (EIT), First Aid

Years with DEA
2 (2005, 2006, & 2011)
(2011-2016) 5 years
**rehire

Years with Other Firms
1

Experience:

On-Call Land Surveying Services, for BPA, Oregon, Washington, and Montana

Mr. Lyman serves as a field survey technician on various projects for BPA. Services typically include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, and high definition laser scanning.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary, and Cadastral Survey, for BPA, Oregon and Washington

Mr. Lyman served as a field survey technician providing detailed cadastral surveys, primary and secondary control networks, and boundary surveys for the I-5 Corridor Reinforcement electrical transmission line project. He conducted extensive cadastral type surveys over 30 townships, and hundreds of section corners, conducting extensive work with GIS to accomplish this task. DEA's services include control, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor.

Big Eddy – Knight 500kV Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Lyman served as a field survey technician for the Big Eddy to Knight electrical transmission line project, with focus on tower staking via GPS-RTK. Tasks also included surveys on sensitive tribal land. Specific tasks included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 29 miles of primary route and 50 miles of alternative route transmission corridor.

Carty Lateral Natural Gas Pipeline FERC Application, Boundary Resolution, and Cadastral Survey, for TransCanada, Boardman, Oregon

Mr. Lyman served as a field survey technician providing field data collection via GPS-RTK, construction staking, as-built surveys, and monitoring for the proposed Boardman to Heppner natural gas pipeline project that will serve Portland General Electric's proposed natural gas generation plant. Mr. Lyman coordinated directly with the transmission line operator, TransCanada, during construction to provide detailed mapping and pipe data. DEA provided preliminary route mapping, cadastral survey, and GIS exhibit maps for FERC permitting of a 30-mile route. The deliverables included cadastral, boundary, topographic maps, and shape files in AutoCAD and GIS formats.

Ian Marx | Party Chief

Mr. Marx is a DEA field survey technician with 13 years of experience. During his tenure with DEA, he has worked to gather field survey data for transmission lines, substations, roadway mapping, ALTA surveys, boundary surveys, and construction surveys. He is experienced with mobile laser scanning systems and in past projects has successfully passed federal background checks in accordance with FAA regulations. He carries a variety of safety certifications for various major transportation agencies.

Resume (30)



Certifications
First Aid
TWIC Badge
HAZWOPER
E-Railsafe
BNSF Railroad Safety
TriMet Light Rail Safety
On-Track Safety
Fall Protection
ODOT Medical Card

Years with DEA
10 (2006)

Years with Other Firms
3

Experience:

Keeler – Tillamook No. 1 Rebuild Project, for BPA, Washington and Tillamook Counties, Oregon

DEA provided surveying services to upgrade this 58-mile wood pole transmission line in western Oregon, from Keeler substation in Hillsboro through Forest Grove substation to Tillamook substation. DEA's tasks included establishing survey control, verifying and supplementing LiDAR data provided by BPA, locating proposed access road alignments and affected property boundaries, preparing acquisition documents for approximately 90 parcels, revamping the existing 1950s plan maps to include new design and new acquisitions, preparing new profile maps using a PLS-CADD design model, and staking structures in new locations. Mr. Marx served as a field survey technician for this project.

I-5 Corridor Reinforcement 500kV Electrical Transmission Line, Control Network, Design, Boundary and Cadastral Survey, for BPA, Oregon and Washington

Mr. Marx served as a field survey technician providing data collection services for the I-5 Corridor Reinforcement electrical transmission line project. DEA's services included control network, design mapping, crossing studies, tower positioning, cadastral surveys, boundary surveys, and legal descriptions with exhibit maps for 80 miles of primary route and 150 miles of alternative route transmission corridor.

On-Call Land Surveying Services, for BPA, Oregon and Washington

Mr. Marx serves as a field survey technician on various projects for BPA. Services typically include geodetic control surveys, transmission line surveys, substation surveys, topographic surveys, crossing studies, tower staking, upgrade studies, access road surveys, boundary surveys, beam paths (for microwave communications), resource grade GPS mapping, and high definition laser scanning.

Carty Lateral Natural Gas Pipeline FERC Application, Boundary Resolution, and Cadastral Survey, for TransCanada, Boardman, Oregon

Mr. Marx served as a field survey technician for the proposed Boardman to Heppner natural gas pipeline project that will serve Portland General Electric's proposed natural gas generation plant. DEA provided preliminary route mapping, cadastral survey, and GIS exhibit maps for FERC permitting of a 30-mile route. The deliverables included cadastral, boundary, topographic maps, and shape files in AutoCAD and GIS formats.

Mark J. Smith | Party Chief

Mr. Smith serves as a party chief and specializes in GPS control surveys. He has more than 32 years of experience with boundary, topographic, construction, ALTA/ACSM, right-of-way, land subdivision, and GPS control surveys. Mr. Smith has completed State Plane Coordinate seminars, as well as in-house GPS training. He has been involved with both small and very large projects including numerous large topographic and route surveys, and major construction projects of roads, bridges, and sewers. Mr. Smith is railroad safety certified for BNSF Railway and UPRR, safety certified for TransCanada Pipeline Company, and has received safety training from Potlatch Lumber Company and Hecla Mining Company.

Resume (31)



Education
Safety, Potlatch Lumber Company and Hecla Mining Company

Certifications
Railroad Safety Certified, BNSF and Union Pacific Railroad
Safety Certified, TransCanada Pipeline Company

Years with DEA
18 (1998)

Years with Other Firms
14

Experience:

I-5 Corridor Reinforcement 500 kV Transmission Line, for BPA, Southwest Washington and Northwest Oregon

DEA is currently working on this project as a subconsultant to HDR Engineering, which serves as the engineering program manager. HDR is managing the project under a contract that includes surveying and related services to BPA for transmission lines, substations, communications, access roads, and property acquisition. DEA was selected for this work due to our nearly 20-year relationship providing surveying services to BPA. Mr. Smith served as a party chief on this project.

Mainline Realignment Services for the US 395 North Spokane Corridor, for Washington Department of Transportation, Spokane, Washington

Mr. Smith served as a survey party chief on this project that involved the realignment of the railroad designed in conjunction with WSDOT's US 395 North Spokane Corridor project. DEA was the prime consultant for this railroad realignment project including tracks, three new railroad grade-separation bridges, retaining walls, grading and drainage improvements, access roads, utility relocations and protections, and signal and communication facilities. Critical issues to the success of this project included coordination with BNSF Railway and WSDOT, working within train operating parameters, geotechnical solutions of the bridge and retaining wall foundations, and structural design.

I-90, Mullan to Montana State Line, for Idaho Transportation Department, Shoshone County, Idaho

Mr. Smith served as a survey party chief to provide topographic mapping services on this 6-mile mountain pass highway corridor that was scheduled for resurfacing. Due to safety concerns as a result of the narrow travelway, DEA used our Titan® mobile laser scanning equipment to map the route. One field day with the mobile scanner was needed for the mapping effort, with only minor traffic restrictions. Additional field data was gathered using RTK GPS as well as conventional terrestrial survey methods. The DEA survey team generated an electronic CAD topographic map of the corridor that provided survey control points, drainage structure locations, and other such improvements.

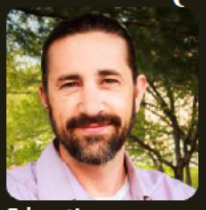
Lakeside – Segment 4 Sprague Tokio Double Track, for BNSF Railway, Sprague, Washington

DEA is providing rail, civil, and structural engineering services to BNSF Railway for this 18-mile project along the Lakeside Subdivision single-track main line that will extend the existing Tokio siding to connect with Sprague siding and on through the City of Sprague to create a 17-mile segment of double track. The project includes more than 14,000 feet of new main track and a new crossover to form a new control point, multiple transitions of the new track from one side of the existing mainline to the other, removal of existing siding turnouts, signal facilities, and site preparation and grading. Mr. Smith is serving as a survey party chief on this project.

Joshua L. Miller | Party Chief

Mr. Miller has over 16 years of experience with boundary, topographic, ALTA/ACSM, construction, and civil site design surveys. His office experience includes preparation of site plans, subdivision plats, sewer and water plans, structural drawings, topographic survey drawings, right-of-way mapping, and Record of Survey drawings. He currently serves as a survey technician with strong capabilities, both in the office and in the field. Mr. Miller is proficient in the field with a Leica TS15 series total station and GS14 GPS systems, and a number of software programs including MicroStation V8 and XM, InRoads, and AutoCAD Civil 3D 2012. He has worked with a variety of client survey standards including BPA, Idaho Transportation Department, FHWA, National Parks Service, and others. He has been with DEA since 2005.

Resumes (32)



Education
AAS, Drafting, 2000, ITT Spokane

Certifications
e-Rail Safe
BNSF
UPRR
Veriforce

Years with DEA
10 (2005)

Years of Experience
15

Experience:

I-5 Corridor Reinforcement 500 kV Transmission Line, for BPA, Southwest Washington and Northwest Oregon

DEA is currently working on this 80-mile transmission line project as a subconsultant to HDR Engineering, which serves as the engineering program manager. DEA is providing survey and mapping services including control, boundary surveys, topographic mapping, and documents for acquisition. Mr. Miller has served as a survey technician on this project.

Hills Creek – Lookout Point Transmission Line, for BPA, Lane County, Oregon

BPA acquired a partial transmission line system from Lane County Electric Cooperative in the 1950s. This project runs approximately 26 miles from Hills Creek Reservoir, just west of Oakridge, Oregon, to the Lookout Point Dam near Lowell, Oregon. In 2013, BPA requested DEA to provide field surveying, mapping, and legal description services for approximately 160 access road and public road approach acquisition documents. These include documents for the U.S. Forest Service (Willamette National Forest), U.S. Army Corps of Engineers, UPRR, various private lands, and timberland companies. Mr. Miller has served as a survey technician on this project.

Granite Falls 115kV Loop, for Snohomish County Public Utility District No. 1, Snohomish County, Washington

DEA provided pole staking along SR92, floodplain mapping, as -built locations of proposed pole/anchor locations, right-of-way, and parcel lines for this transmission loop in Granite Falls, Snohomish County. Mr. Miller acted as a survey technician for this contract.

Plat and Short Plat Review Services, for the City of Spokane Valley, Washington

Mr. Miller assisted in the review of proposed final plats, short plats, binding site plans, and boundary line adjustments to confirm that the survey information included in these documents met the requirements of city and state law.

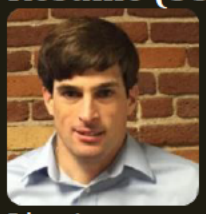
On-Call Services, for the Spokane International Airport, Spokane, Washington

Working as a subconsultant to T-O Engineers, DEA has been providing on-call surveying services to the Spokane Airport Board since 2013. Through a number of task orders, DEA has performed boundary surveys, topographic surveys, ALTA/ACSM land title surveys, construction staking, and filing Records of Survey with the Spokane County Auditor. Mr. Miller is serving as survey technician for this project.

Kyle J. McNaught-Davis, EIT, LSIT | Party Chief

Mr. McNaught-Davis has over 18 years of experience in a broad variety of field and office survey projects, as well as road and highway design. His education in engineering, coupled with his design experience and survey experience, makes him a strong contributor to highway and road survey projects. This background allows him to be involved in both field and office tasks as needed, often being involved with field survey, data processing, calculations, and drafting on a single project. Mr. McNaught-Davis is proficient with Leica TS15 series total stations, GS14 GPS systems, and a number of software programs including MicroStation V8i and XM, InRoads, GEOPAC, AutoCAD Civil 3D 2012, HEC-RAS, HY8, FlowMaster, and Culvert Master. He has recent experience with LiDAR point cloud data, Records of Survey, legal descriptions, and topographic surveys. He has worked with a variety of client survey standards including Montana Department of Transportation, Idaho Transportation Department, Washington Department of Transportation, FHWA, U.S. Army Corps of Engineers, National Parks Service, and others. He has been with DEA since 2004.

Resume (33)



Education
BS, Civil Engineering, 2002, Washington State University

Registration
Engineer-in-Training, Washington (25612), 2002
Land Surveyor in Training, Washington (1151), 2011

Certifications
ITD Inspector Qualifications (#22632)
Concrete & Structures
Contract Administration
Earthwork & Base
Surface Treatment and Plant Mix Pavement
Traffic Construction Inspection
WAQTC Qualification (#22632)
American Society of Civil Engineering

Years with DEA
12 (2004)

Years of Other Firms
6

Experience:

Sanitary Sewer and Reclaimed Water Easement, for Spokane County Utilities, Spokane County, Washington

Mr. McNaught-Davis worked as a survey analyst to assist in creating easement documents for a 6-mile section of existing sanitary sewer trunk line and a future reclaimed water line to be constructed in the same corridor. DEA was retained by Spokane County Utilities for the project. The sewer line is located almost entirely in abandoned railroad right-of-way. DEA performed historical research of available records in order to prepare easement legal descriptions and exhibit maps to support the land conveyance.

US 95, Athol Stage Design and Right-of-Way Plans, for Idaho Transportation Department, Kootenai County, Idaho

DEA was selected by the Idaho Transportation Department to design the US 95/SH-54 Interchange. The project includes a diamond interchange design, design of the 2-mile relocation of US 95, the reconstruction and widening of a 0.35-mile length of SH-54, numerous local road extensions and connections, intersection and ramp gore design, complete signing and pavement marking plans, illumination design for SH-54 and the interchange ramps, a detailed construction staging and traffic control plan, and full right-of-way plans with associated legal descriptions to support acquisition activities by the state. Mr. McNaught-Davis assisted in the surveying effort, which included creating an overall design-level base map for the project by combining mapping collected by DEA and others, and preparing an ownership map, right-of-way plans, and legal descriptions.

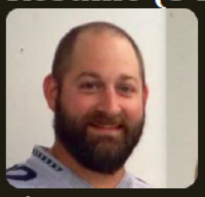
I-90, Mullan to Montana State Line, for Idaho Transportation Department, Shoshone County, Idaho

DEA contracted with Idaho Transportation Department to prepare a design-level topographic survey for over 5 miles of I-90 from Mullan to the Idaho-Montana state line. The survey will be used to design a total reconstruction of the concrete pavement including the shoulders. Because this roadway is mountainous and windy, DEA utilized our TITAN® mobile laser scanning equipment to capture the majority of the survey data while traveling safely at highway speeds. This allowed for minimal road closures and safety threats to the survey crews. Conventional survey methods were used as necessary to support the mobile scanning effort. Mr. McNaught-Davis served as a survey analyst for this project.

Erich Hiersche | Party Chief

Mr. Hiersche joined DEA's Triad Division as an intern in 1999 after completing a two-year, Associate of Applied Science in Land Surveying degree at Renton Technical College. He worked in Alaska for a time, but returned to DEA as a field crew member in 2004 and was promoted to party chief in 2005. His specialties include 3D laser scanning, boundary and topographic surveys, as-built surveys, ALTA surveys, and construction staking.

Resume (34)



Education
Associate of Applied Science in Land Surveying, 1999, Renton Technical College

Years with DEA (Triad Division)
17 (1999, 2004 & 2015)
**rehire

Years with Other Firms
2

Experience:

Lower Baker Lake Powerhouse/Penstock, Puget Sound Energy, Skagit County, Washington

Puget Sound Energy recently built an additional powerhouse at the Lower Baker Dam near Concrete, Washington. The project consisted of new construction of an approximately 1,000-foot-long, 12-foot internal diameter penstock tunnel, including an underground connection to an existing penstock and a 30 MW powerhouse along the east shoreline of the Baker River, downstream of the existing Lower Baker Dam. Working for PCL Construction, DEA's Triad Division provided construction staking services for all facets of this project. Some of the interesting and challenging tasks included providing alignment and grade for the penstock tunnel that was built from the two ends, and providing grade and alignment to set the power turbine per the tight tolerances recommended by the manufacturer. Mr. Hiersche served as party chief on this project.

Spurgeon Utility Survey, for Puget Sound Energy, Thurston County, Washington

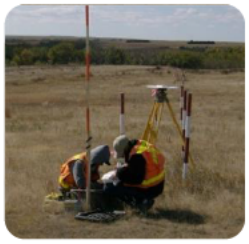
DEA's Triad Division has completed a route survey for Puget Sound Energy for the design of an electrical transmission line southeast of Olympia, Washington. The survey was approximately 8.3 miles in length; it predominately followed existing power lines within public road rights-of-way. Using our Leica ScanStation2, 3D laser scanner, and conventional survey equipment on this project, we mapped all topographic features within 25 feet of each side of the centerline of power lines. The right-of-way lines for the public roads were determined using information obtained from Thurston County, City of Lacey, and the Survey Research Online Service hosted by the Washington State Department of Natural Resources Public Land Survey Office. The property lines shown on the survey drawings were obtained from the Thurston County's Geographic Information System. Mr. Hiersche served as party chief on this project.

Greenwater Transmission Route, for Puget Sound Energy, Pierce County, Washington

Mr. Hiersche, as party chief, completed a route survey for Puget Sound Energy for the design of an electrical transmission line near Greenwater, Washington. The survey is on public land managed by the U.S. Forest Service and is approximately one-quarter of a mile in length. The boundary line between public and private ownership was determined together with mapping of topographic features within the proposed electrical transmission line corridor. The datum for the project was NAD 83/91 (horizontal) and NAVD 88 (vertical), which was established using our GPS surveying equipment.

Overlake Hospital Medical Center, for Various Clients, Bellevue, Washington

Working for several clients over the years, DEA's Triad Division has performed decades of survey services for Overlake Hospital Medical Center. Today, this 337-bed, nonprofit regional medical center offers a full range of advanced services to the Puget Sound Region. Survey services have included boundary and topographic surveys, building site plan, horizontal and vertical control, construction layout, building grid lines, floor grid lines and slab edges, foundation and footings, site utilities, soldier pile walls, roadway and curb, off-site infrastructure staking, and as-constructed surveys. Mr. Hiersche served as party chief on this project.





Section 2 | Technical Approach





Section 2 | Technical Approach

The following is DEA's technical approach for each of the categories shown in the RFO.

- ***Boundary and Topographic Survey for Existing Heavily Wooded Substation Parcel in .dgn Format***

Labor Classifications:

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician
- Survey Aide
- Land Survey Office Technician
- Clerical/Administration

Equipment:

- Robotic Total Station, data collector, GPS equipment (if needed for establishing coordinates), level.
- Fully equipped four-wheel drive survey vehicle with standard survey equipment (e.g., machetes, hammers, flagging, axes, prism poles, metal locator, compasses, handheld GPS device, laptop computer with ArcGIS and Trimble Business Center (TBC) loaded, digital camera, safety equipment, etc.)
- Cell phone/Smart phone

Methods and Approach:

1. Upon receipt of the Work Assignment, the Survey Manager will assign a Quality Manager and a Project Surveyor based on project experience and availability. The Project Surveyor will communicate directly with the BPA Contracting Officer's Technical Representative (COTR), Project Surveyor or other project members to clarify scope and requirements, and then prepare a project estimate. The estimate will be reviewed by the Survey Manager before it is submitted to the COTR.

2. The Project Surveyor will then meet with BPA staff for a project kickoff meeting (in person or by phone) to discuss specifics such as: project purpose and size, site conditions, desired survey techniques (such as terrestrial survey or LiDAR mapping), site access, Permission to Enter Property (PEP) for adjacent parcels, design standards, existing roadways, environmentally sensitive areas, possible presence of threatened and endangered species, archaeological sites, etc.

3. The Project Surveyor will research public records or BPA eGIS for existing horizontal/vertical control in the project vicinity, pertinent Records of Survey, public lands corner information, adjoining deeds, zoning, and ownership metadata such as adjoining parcel owner names, addresses, and contact information as needed. If applicable, BPA Realty will also provide pertinent title report information.

4. The Project Surveyor will consult with the BPA Project Surveyor to develop a site control plan so that the established/measured control network will meet the needs not only of the topographic/boundary survey but also of the other design professionals who may rely on spatial data sets.

5. The Project Surveyor will prepare a field schedule and work with the field coordinator to assign appropriate experienced field personnel. Likewise, appropriate office staff will be assigned, and a team meeting will be scheduled to discuss project details (e.g., BPA project goal, accuracy standards, budgets, data collection methods, confidence procedures, site location, monumentation, necessary BPA reports, and assignment of project roles and responsibilities.

6. Clerical/administrative staff will arrange lodging, per diem, and other travel requirements per BPA request or as the site location warrants.

7. Survey Party Chief(s) will be provided project folders that contain pertinent PEP forms, Land Corner Records, Records of Surveys, GLO notes (if applicable), and Deed Records. Field survey personnel will perform site reconnaissance for establishment of any necessary control points in the site vicinity; the number and density of control points will be dictated by the size of the site. The crew will recover controlling boundary monumentation, develop to-reach descriptions and initial cadastral retracement records on BPA-approved note sheets, lay out the control traverse, and commence surveying tasks.

8. Historically, BPA procedures for topographic surveys dictated establishing a grid and then measuring these points with terrestrial survey equipment for the purpose of developing a digital terrain model (DTM) and subsequent contour map, with the grid spacing being dictated by the specified contour interval. More recently, DEA typically uses radial methods, with shots spaced appropriately for the contour interval and ground conditions. DEA employs a check-shot procedure. After initial orientation, between 25 and 50 radial shots are taken, and then a check shot is made to the backsight control point. The instrument is checked to verify that it is still level and the prism rod height is confirmed. Radial shots are taken to define grade breaks and planimetric features. Field personnel will make field notes/sketches to aid in modeling complicated features.

9. The Survey Party Chief will hold tailgate safety meetings with field personnel to discuss hazards and raise awareness on a daily or as-needed basis. Brief summaries of these safety meetings will be noted on the daily crew reports. In addition, the DEA Geomatics department holds safety meetings each Monday morning to raise safety concerns and open dialogues among field staff regarding specific safety concerns.

10. The Survey Party Chief or Survey Technician will download electronic data files at the end each day, and will complete daily project logs. When crews are working out of town, data collection files will be transmitted digitally each night.

11. Each morning, the Land Survey Office Technician will process data collection files and produce point plots showing the extent of data collection to date, thereby identifying progress and graphically showing any holes or gaps in the field data, and will communicate to the field crew(s) the overall progress and any issues with data that may need to be addressed.

12. The Land Survey Office Technician will set up the initial project drawing including standard borders, title blocks, etc. within the MicroStation V8i environment using the most recent BPA-approved workspace, and will import processed data for daily mapping and in preparation for building the Digital Terrain Model (DTM).

13. The Project Surveyor will review field survey progress and assess sufficiency of ties to boundary monumentation. Once the control traverse has been completed along with subsequent ties to controlling monuments, the boundary resolution will commence, preferably before completion of the topographic survey. The DEA Project Surveyor will review the completed boundary resolution with the BPA Project Surveyor and will discuss any missing monuments that should be reset, which would thereby necessitate the filing of a Record of Survey with the appropriate county (affecting project costs). For efficiency, the field crews may be able to establish/re-establish boundary monumentation (if required) before completion of all field work.

14. The Land Survey Office Technician will prepare closure reports and a confidence analysis, and will develop the project scale factor (for converting grid coordinates to ground or to BPA local system, so that coordinate inverses yield ground distances), typically scaled about the substation baseline intersection.

15. The Land Survey Office Technician will complete base mapping, DTM surface modeling, and contour mapping per BPA CADD standards. The base map shall be scaled to ground distances.

16. The Project Surveyor will perform a "red-line" review of the base mapping, including a site visit to identify sufficiency of map data and any possible oversights, and will then perform a DEA Check Print review of the printed plan maps. See also Quality Assurance (QA) and Quality Control (QC).

17. Field notes will be indexed using the BPA Consecutive Field Note Index (CFNI). The notes will be red-checked, signed, numbered, and scanned. The Project Surveyor or Land Survey Office Technician will assemble a deliverable package per BPA standards and arrange delivery to the BPA Project Surveyor.

- ***Stake Transmission Structures For Construction***

Labor Classifications:

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician
- Land Survey Office Technician
- Clerical/Administration

Equipment:

- Robotic Total Station, data collector, GPS equipment (if needed for establishing coordinates), level.
- Fully equipped four-wheel drive survey vehicle with standard survey equipment (e.g., machetes, hammers, flagging, axes, prism poles, metal locator, compasses, handheld GPS device, laptop computer with ArcGIS and Trimble Business Center (TBC) loaded, digital camera, safety equipment, etc.)
- Cell phone/Smart phone

Methods and Approach:

1. Upon receipt of the Work Assignment, the Survey Manager will assign a QA Manager and a Project Surveyor based on project experience and availability. The Project Surveyor will communicate directly with BPA COTR, Project Surveyor or other project members to clarify scope and requirements, and then will prepare a project estimate. The estimate will be reviewed by the Survey Manager before it is submitted to the COTR.

2. The Project Surveyor will then meet with BPA staff for a project kickoff meeting (in person or over the phone) to discuss specifics such as: project purpose and size, staking procedures, tower types and related stakes to employ, survey lath placement, offsets, and Design Engineer concerns (means, method, or layout).

3. BPA will provide supporting structure staking documentation such as: approved POT-BM list, site data sheets (particularly important where structure to be staked requires guy wires/anchors), a structure list, structure details and diagrams (e.g., monopole, H-frame, 3-pole, square or rotated steel), specific leg dimensions, offsets, running angles, and more.

4. Survey Party Chief(s) will be provided project folders that contain pertinent PEP forms, applicable plan maps, structure lists, POT/BM list, topographic maps/vicinity maps (to identify access routes to structure site), and existing control data sheets.

5. The Project Surveyor will conduct a project kickoff meeting with field staff to discuss safety considerations, work products, protocols for communication with adjoining landowners (if any), field procedures, note keeping, and communication of field survey data to office personnel should this task require out-of-town travel.

6. Clerical/administrative staff will arrange lodging, per diem, and other travel requirements per BPA request or as the site location warrants.

7. Upon arrival on site, the Survey Party Chief will assess site conditions and direct the Survey Technician in coordinating a recovery effort for existing project control, if any.

8. If the structure to be staked is at an angle point, sufficient field work will be required to reconstruct the ahead and back tangents from existing structures and to verify measured angles against record data before establishing the survey angle point. If there is existing L-Line monumentation within sight of the angle point to be re-established, it can be used for the purposes of tower staking only after verification by "wiggling in" from conductor attachment points between existing tangent structures to check tangency. Additional permanent or temporary points on tangent (POTs) can be set as needed to perpetuate the alignment through construction. If the existing structure types allow sighting along the L-Line, then an alignment check through several conductor attachment points is strongly advised. If there are alignment issues, several points must be established and measured along the affected tangents. The Project Surveyor may prepare a regression analysis to determine a best fit to the existing conditions. The Survey Party Chief will need to field verify the results. The vertical datum is verified by running a differential level loop either from the working points of an existing steel lattice structure or from project-approved or verified benchmarks as indicated on the POT-BM list.

   Once the tangents and L-Line angle have been checked, a hub and tack or approved BPA monument (as specified by the BPA Project Surveyor) is established at the survey angle point. At this juncture, the instrument person moves the instrument onto this point and re-checks the L-Line (running) angle. If the L-Line angle sufficiently matches the record information (angular tolerances have been specified by the Design Engineer), a sighting point is set on the bisector of the ahead and back tangents. This procedure is recorded in the field notes, and all computations used to achieve this result are shown. If the structure list or tower site data sheet specifies an offset, then a hub and tack is established at the structure center, left or right depending on structure design. The layout of this structure center is then rechecked before moving the instrument. Once the layout is satisfactory, the instrument person moves the instrument onto the tower center, at which point the structure layout is commenced.

   If this is a monopole structure without guy anchors, then setting two references to the tower center, generally at 25- and 50-foot intervals (horizontal distance only) along the bisect (with appropriate identifying survey lath) will suffice.

   If this is an H-frame wood pole structure, then a hub and tack is established at each pole center and at 25- and 50-foot intervals from each pole out along the bisector. Site conditions may dictate deviations from this procedure. If so, the BPA/DEA Project Surveyor is notified, so that a modified layout can be determined.

If this is a square steel lattice structure, the tower leg alignments are staked by turning 45-degrees ahead online from the interior bisector to the leg number one, and 90-degrees more to each of the subsequent legs, then checking back into the bisector. All measurements are recorded and sketched in the field notes. If required, "C" dimensions and offsets are staked (the distance from the tower center to the center of grillage or concrete leg footing). The specific structure type, body height, and leg extension length are used to determine the "C" dimension for each leg. This information is provided by BPA on the Steel Tower List and Structure Type Diagram.

If this is a rotated steel lattice structure (uncommon nowadays), the tower leg alignments are staked out along the interior bisector and at 90-degrees to each of the subsequent legs, following the same procedures previously outlined.

The Survey Party Chief must be aware of discrepancies between existing site conditions and design information. These discrepancies are communicated to the DEA and BPA Project Surveyors before the crew leaves the site.

9. To stake a tangent structure, the field crew will go through the same procedures for verifying or establishing alignments and POTs as described above in the section for "Staking a structure at an angle point." Once the alignment and POTs are checked and found sufficient, a hub and tack or approved BPA monument (as specified by the BPA Project Surveyor) will be established at the specified station and in line with the POTs. Pole centers, guy anchors, and/or leg layout can proceed as described above. However, leg alignments for steel lattice structures are laid out relative to the tangent by sighting ahead on line and turning either a 45-degree horizontal angle left into leg one, then 90-degrees to the subsequent legs (for a square steel structure) or directly ahead on line for leg "A" (for a rotated steel structure) and then 90 degrees to each of the subsequent legs. H-frame or 3-pole tangent structures are laid out turning a 90-degree angle off the tangent and setting the pole center and offsets along the pole center line, typically at 25- and 50-foot offsets to the pole center.

10. The Project Surveyor will monitor progress, scope, schedule, and budget, and will keep the BPA Project Surveyor/COTR current and informed on all matters related to the work. Any issues related to time spent in the field that appear to be pushing the project budget over the estimated amount will be immediately addressed. Communication with the Survey Party Chief will be the first step in this process, to identify why it may be taking longer and what measures can be taken to increase efficiencies or production.

11. Once field survey data arrives in the office, the Land Survey Office Technician or a Survey Technician can begin checking field notes, processing data, and updating POT/BM lists if needed. Once this is completed, it is verified by the Project Surveyor. If no CAD deliverables are part of the Work Assignment, a project deliverable packet can be prepared.

12. Field notes are indexed using the BPA Consecutive Field Note Index (CFNI). The notes will be red-checked, signed, numbered, and scanned. The Project Surveyor or Land Survey Office Technician will assemble a deliverable package per BPA standards and arrange delivery to the BPA Project Surveyor.

- ***Staking For Earthwork To Address An Impairment To A Transmission Line***

<u>Labor Classifications:</u>

- Survey Manager

- Project Surveyor
- Survey Party Chief
- Survey Technician
- Land Survey Office Technician
- Clerical/Administration

Equipment:

- Robotic Total Station, data collector, GPS equipment (if needed for establishing coordinates), level.
- Fully equipped four-wheel drive survey vehicle with standard survey equipment (e.g., machetes, hammers, flagging, axes, prism poles, metal locator, compasses, handheld GPS device, laptop computer with ArcGIS and Trimble Business Center (TBC) loaded, digital camera, safety equipment, etc.)
- Cell phone/Smart phone

Methods and Approach:

1. Upon receipt of the Work Assignment, the Survey Manager will assign a QA Manager and a Project Surveyor based on project experience and availability. The Project Surveyor will communicate directly with BPA COTR, Project Surveyor or other project members to clarify scope and requirements, and then will prepare a project estimate. The estimate will be reviewed by the Survey Manager before it is submitted to the COTR.

2. The Project Surveyor will then meet with BPA staff for a project kickoff meeting (in person or over the phone) to discuss specifics such as: project purpose and size, site conditions, project design, staking procedures, expectations, documentation, and concerns.

3. BPA will provide: LiDAR data (if available), a list of impairment locations, and design-related data including the POT-BM list, site data sheets (for the structures ahead and back of each of the suspected impairments), a structure list, structure diagrams, specific tower leg dimensions, offsets, running angles, etc.

4. Survey Party Chief(s) will be provided project folders that contain pertinent PEP forms, applicable plan maps, structure lists, POT/BM list, topographic maps/vicinity maps (to identify access routes to each impairment site), and existing control data sheets. The LiDAR files can be loaded on the Survey Party Chief's laptop for checking the LiDAR data within PLS-CADD to determine widths between conductors (to be used for high-side profile check shots).

5. The Project Surveyor will conduct a project kickoff meeting with field staff to discuss safety considerations, work products, protocols for communication with adjoining landowners (if any), field procedures, note keeping, and communication of field survey data to office personnel should this task require out-of-town travel.

6. Clerical/administrative staff will arrange lodging, per diem, and other travel requirements per BPA request or as the site location warrants.

7. The basic premise for field work on this effort involves verifying LiDAR information and leaving sufficient stakes to direct excavation that is necessary to remove the impairment. If the impairment is of a size that renders excavation impractical, surveying site conditions will allow a design modification to be made to the existing structures, which could involve either removal of the existing structures and constructing new ones, or modifying them in such a way as to avoid the impairment. This requires close communication with the BPA Project Surveyor or Design Engineer.

8. If simple excavation can remove the impairment, then the crew may be directed to use GPS (OPUS RS or RTN/RTK) to set control (if needed) with coordinates in the same project datum as the LiDAR data to verify the impairment and set stakes for clearing or grading. Ground profile shots will be taken beneath each of the transmission line conductors (or a specified grid of shots as directed by the BPA Project Surveyor), and reflectorless shots will be taken on each of the conductors at one-quarter, one-half, and three-quarter span length (noting the time of day, the temperature, the weather, and the wind speed/direction at the time each conductor is shot). If there is no project LiDAR data, the BPA project Surveyor may direct DEA to use methods described in the BPA Surveying Manual for re-establishing alignments, project datum, and elevations, and setting double 90-degree offset points to the conductors at one-quarter, one-half, and three-quarter span length for acquiring multiple conductor elevations.

9. If removal of the impairment requires something more than excavation (e.g., line relocation, tower moves, or structure upgrades), the transmission alignment may need to be resolved, and additional mapping and acquisitions may be needed through the impairment area, before staking can occur. The BPA Project Surveyor and/or Design Engineer will provide new staking needs for structures and or earthwork. The field crew will then return to the site, complete staking, and upon completing staking, prepare cut sheets for the stakes.

10. The Project Surveyor will monitor progress, scope, schedule, and budget, and will keep the BPA Project Surveyor/COTR current and informed on all matters related to the work. Any issues related to time spent in the field that appear to be pushing the project budget over the estimated amount will be immediately addressed. Communication with the Survey Party Chief will be the first step in this process, to identify why it may be taking longer and what measures can be taken to increase efficiencies or production.

11. Once field survey data arrives in the office, the Land Survey Office Technician or a Survey Technician can begin checking field notes and cut sheets, and processing data, etc. Once this is completed, it is verified by the Project Surveyor. If no CAD deliverables are part of the Work Assignment, a project deliverable packet can be prepared.

12. Field notes are indexed using the BPA Consecutive Field Note Index (CFNI). The notes will be red-checked, signed, numbered, and scanned. The Project Surveyor or Land Survey Office Technician will assemble a deliverable package per BPA standards and arrange delivery to the BPA Project Surveyor.

- ***Preparing Strip Legal Descriptions and Narratives With Exhibits From Survey Data, Deeds and Title Reports***

Labor Classifications:

- Survey Manager
- Project Surveyor
- Land Survey Office Technician

Equipment:

- Desktop or Laptop computer with MicroStation V8i
- Current BPA Acquisition Land Acquisition Manual, Document Templates, and Checklists

Methods and Approach:

1. Upon receipt of the Work Assignment, the Survey Manager will assign a QA Manager and a Project Surveyor based on project experience and availability. The Project Surveyor will communicate directly with BPA COTR, Project Mapper or other project members to clarify scope and requirements, and then prepare a project estimate. The estimate will be reviewed by the Survey Manager before it is submitted to the COTR.

2. The Project Surveyor and Land Survey Office Technician will then meet with BPA staff for a project kickoff meeting (in person or over the phone) to discuss specifics such as: project purpose and size, and estimated number of acquisitions and type (LAR, ARAR, AP, or LDR).

3. BPA will provide a transportation plan (if needed), acquisition requests (which define acquisition type), acquisition document templates, title reports, and deed documents if available.

4. Typically, legal descriptions and exhibits are prepared for BPA acquisition documents related to transmission line rights-of-way, access roads, public road approaches permits, foreign crossing permits (public roads, utilities, rivers, etc.), and land disposal documents for relinquishing existing easement or permit rights.

5. Certified title reports are provided by BPA Realty in PDF form. The Project Surveyor will thoroughly review all title reports and documents, highlight pertinent information, and cross-reference exceptions to title with the respective record documents. The title description is verified against the actual deed of record for the pertinent parcels. If errors are discovered, BPA is notified and the title company is requested to update the report to fix any errors.

6. If field surveys are provided by BPA, then the Project Surveyor will prepare a Surveyor's base map. Survey data is brought into the base map, and existing Record of Survey information is drawn, and placed on and rotated to found survey monumentation. Record and measured survey data is then evaluated to determine whether a sufficient boundary resolution can be determined. A draft boundary resolution is prepared, and the Surveyor's base map is submitted to the BPA Project Surveyor for review and approval prior to use for acquisition mapping.

7. Once the Surveyor's base map is approved, the Project Surveyor will begin preparing acquisition documents and legal descriptions, while the Land Survey Office Technician begins preparing exhibits and producing new or updating existing BPA plan maps. The BPA Acquisition Surveyor and current BPA Land Acquisition and Mapping Manual are consulted throughout the production of documents to achieve harmony with current standards and preferences. (DEA has five Professional Land Surveyors who have been trained to check acquisition documents, one of which is a BPA Certified Acquisition Document Checker.) BPA document checklists are used to verify that applicable items are addressed. The document is checked and edited, if necessary, before submittal to BPA.

8. A Surveyor's Narrative is prepared for every acquisition document. This narrative briefly describes the Surveyor's findings. Typical items listed include: a statement that the title description and vesting documents match, and that boundaries are completely covered and are sufficient to meet project needs, and an explanation of how exceptions to title may affect the acquisition (if at all); any special issues that may have required special attention or resolution, road widths, historical information, gaps or overlaps, or the need for a double acquisition to protect BPA interests (as discussed with the BPA Acquisition Land Surveyor in advance); Records of Survey, deeds, and monumentation used in the

resolution of the boundaries; the name or number of the Access Road Instruction (ARI) if applicable; and a datum statement for mapping and its application to new or existing plan maps.

9. Each document is submitted to BPA in a prescribed series of .zip files (FIN, SHP, and SUP), as indicated in the BPA Land Acquisition and Mapping Manual. These files contain, at a minimum, the original Word document, MicroStation exhibit, shape files, narrative, title report, relative plan map, and all related PDFs.

- ***Updating Plan and Profile Maps From a Basemap .dgn File***

Labor classifications:

- Survey Manager
- Project Surveyor
- Land Survey Office Technician

Equipment:

- Desktop or laptop computer with MicroStation V8i
- Current BPA Acquisition Land Acquisition Manual, Document Templates, and Checklists

Methods and Approach:

1. Upon receipt of the Work Assignment, the Survey Manager will assign a QA Manager and a Project Surveyor based on project experience and availability. The Project Surveyor will communicate directly with BPA COTR, Project Mapper or other project members to clarify scope and requirements, and then will prepare a project estimate. The estimate will be reviewed by the Survey Manager before it is submitted to the COTR.

2. The Project Surveyor and Land Survey Office Technician will then meet with BPA staff for a project kickoff meeting to discuss specifics such as: project purpose and size, estimated number of maps to be updated, and types of updates (acquisitions, design, making Hybrid maps).

3. The base map will be created in MicroStation utilizing topographic and cadastral field survey data, LiDAR data, resolved L-Line alignment and right-of-way information, and property lines. This drawing will then be used to produce plan maps and acquisition exhibits for access roads, crossing or road approach permits, or land disposal requests.

4. Old BPA plan and profile maps are scanned to greyscales as Tagged Image File Format (TIFF) images, and then converted into Hybrid drawings to be used for mile map updates. Hybrid drawings are moved, scaled, and rotated onto the coordinate system of the original drawings.

5. Edits and additions to the Hybrid plan map drawing can be copied in from the base map. Graphics that are no longer applicable can be removed or crossed off as required by specific mapping standards. Cadastral lines and property lines used for acquisition may differ between the Hybrid map and the new resolved linework. These changes are labeled with the survey date for the old and new lines, to protect existing acquisitions related to the original surveys.

6. Edits and additions to the Hybrid profile map drawing can be made for utility and road crossings and BPA design specifications for minor updates or equipment upgrades. However, if the transmission line is being rebuilt, it is more efficient to cross out the Hybrid profile map, and create a new profile. For a new profile master drawing, the new design PLS-CADD profile data is exported and brought into

MicroStation. Text labels are edited using information from the L-Line alignment report, structure list, conductor sag instructions, and an updated crossing report. The master profile can then be copied into the individual new profile maps.

7. The Project Surveyor will monitor progress, scope, schedule, and budget, and will keep the BPA Project Surveyor/COTR current and informed on all matters related to the work. Any issues related to time spent in the mapping that appear to be pushing the project budget over the estimated amount will be addressed right away.

8. The Land Survey Office Technician communicates directly with the BPA Project Mapper to discuss current BPA standards and preferences, and to identify measures that can be taken to increase efficiencies or production.

9. Plan and profile maps are submitted to BPA in a prescribed manner, as indicated in the BPA Land Acquisition and Mapping Manual. These files contain the original master plan and or profile MicroStation base map drawings, any Hybrid drawings, and all individual plan and profile drawings.

- ***Establishing and Evaluating Horizontal and Vertical Control***

Labor Classifications:

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician
- Land Survey Office Technician
- Clerical/Administration

Equipment:

- Robotic Total Station, data collector, GPS equipment (if needed for establishing coordinates), level.
- Fully equipped four-wheel drive survey vehicle with standard survey equipment (e.g., machetes, hammers, flagging, axes, prism poles, metal locator, compasses, handheld GPS device, laptop computer with ArcGIS and Trimble Business Center (TBC) loaded, digital camera, safety equipment, etc.)
- Cell phone/Smart phone

Methods and Approach:

1. Upon receipt of the Work Assignment, the Survey Manager will assign a QA Manager and a Project Surveyor based on project experience and availability. The Project Surveyor will communicate directly with BPA COTR, Project Surveyor or other project members to clarify scope and requirements, and then will prepare a project estimate. The estimate will be reviewed by the Survey Manager before it is submitted to the COTR.

2. The Project Surveyor will then meet with BPA staff for a project kickoff meeting (in person or over the phone) to discuss specifics such as: project purpose and size, site conditions, acceptable survey methods or procedures, project datum (local or specific State Plane Coordinate System), whether to perform terrestrial or GPS surveys (or both, based on proximity or availability of existing control), and the need for Geodetic Control Data Sheets and a Geodetic Control Report.

3. BPA will provide: current plan maps and photo maps (if available), PEP forms, templates for the Geodetic Control Data Sheets and Geodetic Control Report, and existing data sheets for geodetic control that is desired to be included in the project control.

4. Survey Party Chief(s) will be provided project folders that contain pertinent PEP forms, applicable plan maps and photo maps (if available), and existing control data sheets.

5. The Project Surveyor will conduct a project kickoff meeting with field staff to discuss safety considerations, work products, protocols for communication with adjoining landowners (if any), field procedures, note keeping, and communication of field survey data to office personnel should this task require out-of-town travel.

6. Clerical/administrative staff will arrange lodging, per diem, and other travel requirements per BPA request or as the site location warrants.

7. Project control could be simple or complex based on the project needs. For a small project, a traverse run from existing site control may be sufficient for project work. Elevations may be established by running a level loop from a steel tower working point or site benchmark.

8. Some projects are in areas that have good cell phone coverage and can utilize GPS RTN methods. Check-in measurements can be made to existing BPA control, National Geodetic Survey (NGS), and/or local Department of Transportation (DOT) control. New control is set and observed two times for three minutes each time, with a minimum of one hour between observations (to utilize different satellite geometry). The standard BPA Field Note form is utilized for field work. Sufficient information is acquired at the time of observation to process the data, including control point identification, photos, reference points, time and length of observation, set up and equipment information, and a sketch if needed.

9. For larger projects, a GPS network may be needed. Line upgrade or rebuild projects require long linear networks. These linear networks differ from a traditional network that would encompass the exterior of a project to support the project from the outside (such as legs on a table supporting the table top from the outside edges rather than from the center, where it would become unstable and tip over). These are often in rural or wooded areas. An OPUS Projects GPS Network is a standard method for establishing and processing project control. If BPA has provided existing control data sheets, that control will be utilized in the network. Points are spaced along the transmission line corridor at approximately 5-mile intervals, and at both ends of the project limits. GPS observations are run for 2.5-hour sessions and are "leap-frogged," with a minimum of a one-half hour of overlapping time before moving. The BPA GPS Field Note form is utilized for field work. Sufficient information is acquired at the time of observation to process the data and prepare Geodetic Control Data Sheets, including: control point identification, photos, reference points, time and length of observation, set up and equipment information, a sky plot, and "drive-to" or "to-reach" directions with sketch.

10. New transmission line projects may have multiple proposed alignment routes. Often when surveying begins, a larger, more traditional GPS static network may be utilized to surround and overlay the entire project area. Additional NGS, local DOT, and Continuously Operating Reference Stations (CORS) are included in the network measurements and evaluated for applicability in determining network adjustments. The BPA GPS Field Note form is used for field work. Sufficient information is acquired at the time of observation to process the data and prepare Geodetic Control Data Sheets, including: control point identification, photos, reference points, time and length of observation, set up and equipment information, a sky plot, and "drive-to" or "to-reach" directions with sketch.

11. All primary control will utilize BPA 3.25-inch aluminum monuments set as described in the current BPA Surveying Manual. Secondary control can utilize "PK" and "MAG" nails, hub and tacks, rebar, scribed marks in concrete, and other less substantial markers.

12. Geodetic grade GPS receivers and antennae will be used on geodetic control surveys. Setups will consist of a tribrach and a tripod, along with recently adjusted equipment. Each observation period will require a new set up. Each point will be connected to the network with at least two independent vectors.

13. The Project Surveyor (or Surveyor who specializes in processing and adjustment of GPS control data) will review and check GPS field notes and data files, focusing on file naming conventions, station names, antenna heights, start and stop times for observation sessions, monument descriptions, and other information that DEA field technicians have included on the field note sheets. If a point needs to be re-observed, this will be conveyed to the field crew immediately.

    The Project Surveyor will process baseline data using accepted baseline processing and network adjustment software (e.g., Trimble Geomatics Office). Daily collection files will be compared with corresponding field notes, and edits will be made as needed. After processing, only independent baselines that are "L1 fixed" or "Iono free fixed" (with software-acceptable statistics) will be used in the network solution. Each day's data will be processed, reviewed, and checked for problems. Baseline loop misclosures may also show potential problems in the network measurements. It may be necessary to re-observe outlier vectors.

    The Project Surveyor will also perform network adjustments. After field observations and baseline processing are complete, a series of network adjustments will be done in the following order: unconstrained, minimally constrained, horizontal, and vertical adjustments. Statistically passing unconstrained and minimally constrained adjustments show that the structure of the network vectors is sound (after outlier baselines—if any—are eliminated). A final horizontal network adjustment is run in which at least three published horizontal control points are held. A final vertical/horizontal adjustment includes holding the horizontal control and at least four published vertical control points. In order to generate orthometric heights, the geoid model is applied during the last adjustment. The constrained horizontal and vertical control points should be geographically well distributed throughout the project, have record positions that meet or exceed the project's accuracy requirements, and show acceptable comparisons with record positions during the adjustment process described above.

    The NGS website will be used to update to-reach or monument condition information on all published control points within the project network.

14. The Project Surveyor (or Surveyor who specializes in processing and adjustment of GPS control data) will prepare the BPA Geodetic Control Data Sheets for primary control points and the Geodetic Control Report for all secondary control.

15. Field notes will be indexed using the BPA Consecutive Field Note Index (CFNI). The notes will be red-checked, signed, numbered, and scanned. The Project Surveyor or Land Survey Office Technician will assemble a deliverable package per BPA standards and arrange delivery to the BPA Project Surveyor.

- ***Effectively Integrate New, Under-Experienced and Under-Trained Employees Into Billable Roles***

1. Training and continuing education is very important at DEA. Staff members are required to be proficient at their jobs. To assist them, we budget 40 to 80 hours of specialized training time per employee, each year. This training could be a combination of continuing education credits, and specialized software training such as TBC, MicroStation, GIS ArcMAP, and MicroStation V8i or InRoads. Other training includes equipment operation and safety training. The following examples describe how we integrate new and under-experienced people into BPA procedures.

2. Weekly meetings are conducted with field staff to discuss safety concerns and lessons learned. A new survey topic is presented each week at this meeting. These topics range from leveraging equipment capabilities, new advances in software programs, GPS (static, OPUS, RTN, and RTK) and Geodesy theory and techniques, equipment calibrations and maintenance, quality control, and proper procedures.

3. Field staff new to BPA procedures are first assigned to work under an experienced Survey Party Chief as a Survey Aide on the crew. They are taught the importance of security related to: personally identifiable information (PII); project plans and information; BPA plan maps; and any other hard copy, digital, or verbal information related to BPA systems or projects. The scope of work for each project is explained along with the importance of their role, and clarity and expectations are emphasized. They are given written examples of note formats, shown how to stamp monuments, and taught safety procedures. They receive specialized equipment instructions and procedures on how to perform a variety of BPA tasks as they become necessary. The Survey Party Chief works with them on the job to make sure they are getting the proper hands-on instructions and experience. After showing proficiency in procedures and with equipment, and gaining an appropriate level of experience, they may become Survey Technicians. To become a Survey Party Chief at DEA, working on BPA projects, we typically require a minimum of five years of total field experience, including two years of working on a variety of BPA projects.

4. DEA has an established culture of sharing knowledge, and our technical staff members regularly attend brown bags. In addition to these informal training sessions, each technician is encouraged to select some formal training each year that will provide an opportunity to grow professionally. This personalized approach to training creates employees who are passionate and dedicated to their work. Our Drafter/CAD Operator II and Land Survey Office Technicians will have three or more years of experience operating our software systems.

5. New staff and those who are growing into a new office technician role receive current BPA standards and copies of the BPA manual. They begin working at the Drafter/CAD Operator II level and are assigned to work alongside a BPA-experienced Land Survey Office Technician. The Land Survey Office Technician and the Project Surveyor will serve as mentors for the duration of each work assignment, and will direct the Drafter/CAD Operator II in the proper procedure and workflow to produce high quality BPA deliverables. This relationship continues until the Drafter/CAD Operator II is comfortable and successful in the new role.

6. Project Surveyors at DEA are licensed Professional Land Surveyors and have many years of experience. So that they gain BPA experience, we assign them to work under the direction and supervision of another Project Surveyor who has BPA experience. They will assist in preparing acquisition documents, boundary resolution, topographic surveys, and other BPA work products. Our Project Surveyors are vetted by BPA, the DEA Survey Manager, and the DEA Principal in Charge, before being inserted into the role of a Project Surveyor on a particular work assignment. Project Surveyors at DEA have excellent

written and verbal communication skills, and are expected to interact regularly with BPA staff to build a collaborative relationship. During these interactions, the Project Surveyor will gain a better understanding of current BPA procedures and standards.

- ***Preparing Field Notes In Support of Digital Data Collection***

1. BPA has a variety of standardized field note sheet formats that include but are not limited to: generic notes (for traversing, levels, topographic mapping, sketches, RTK, etc.), GPS (for static/fast static surveys), cadastral retracement (for perpetuating monument details, location, and sketches), pole staking (2 and 3 pole structures,) structure staking (steel lattice square or rotated), and others. The BPA Surveying Manual contains examples for data entry.

2. The field notes are intended to supplement the digital data files. They provide the context behind the measurements that were taken and all related information regarding what was being measured and why. All field notes, regardless of type, will include sufficient information to understand exactly what was done in field by the survey crew, and will contain some information matching that recorded in the digital files.

3. At a minimum, the cover sheets for almost all notes will indicate the date, sheet number, design and project name, survey party number, a brief description and location of work performed, Section, Township, Range, Meridian, County, State, crew members and their roles, and electronic file names. They are initialed by the note checker and signed by the Project Surveyor at the time of their completion.

4. At a minimum, the inside of the note sheets will contain instrument set up information (make, model, serial number, ppm, height of instrument), field measurements, point descriptions, stations, coordinates, point attribute or code, rod heights, sketches, "drive-to" or "to-reach" directions, site and weather conditions, and all field computations. If there was a complex situation that required a non-typical method of acquiring information, that will be noted as well.

5. All field notes will be as clean as possible, will be prepared in real time at the time the measurements were taken (not transferred from a peg book), and under no circumstances will erasing be allowed in the notes. A single strikethrough line may be drawn through an error and the correct information written alongside it.

6. The Survey Party Chief is responsible for verifying that all notes are clean, complete, and sufficient for use in processing the digital files, before submitting them to the office staff.

- ***Processing Field Data***

1. For crews returning to the office daily, electronic field data is placed on DEA's internal network at the close of each shift, along with scanned images of their daily note sheets. For field crews who are working out of town, electronic data collection files and scanned images of their field notes are submitted digitally to the office each evening (unless the work during their day is only part of a multi-day traverse).

2. A Project Surveyor or Land Survey Office Technician who specializes in processing and adjustment of terrestrial traverse/control data files, will commence review/checking of data files, focusing on file naming conventions and blunders. Raw files are checked for station names and duplicate point

numbers, and to verify that instrument heights and measured data match the field notes and other information included on the field note sheets, such as sketches.

3. It is standard DEA field procedure to take digital photographs of survey control points and anything else that may require an image to clarify the field notes. These digital images are uploaded to our internal network at the same time as the data collection files and images of the note sheets.

4. At this time, a complete note sheet check is performed. Comments on needed field note corrections or voids found in the daily fieldwork can be communicated to DEA field personnel and addressed in a timely manner. Once the field data has been checked, the files are processed with closed traverse data adjusted using least squares adjustment software (e.g., Trimble Business Center (TBC)). Traverse adjustment report files are created for review of statistical reliability and project documentation as part of the deliverable. Tower centers, POT monuments, L-Line and right-of-way staking, tower legs, miscellaneous features, stream and road topography, etc. are processed from these adjusted traverses. Resulting reports are reviewed for problems.

5. Any apparent defects in the field data are then flagged and communicated to the Survey Party Chief responsible for that field data for further analysis or possibly remeasurements.

6. Upon completion of processing of the electronic data collection files, an "All-points.csv" file in the form "ID, N, E, EL, Feature code, Feature code attribute" is output from TBC. The Land Survey Office Technician or Drafter/CAD Operator II is then notified that the field data is processed and ready for inclusion in project mapping. TBC output files may also be prepared for direct input into other required BPA reports such as POT/BM Lists, Geodetic Control Report, Tower-Structure Coordinate List, Cadastral Report, or LiDAR Truthing Report.

7. The Project Surveyor will meet with the Land Survey Office Technician or Drafter/CAD Operator II to review and determine that all mapping and reports are acceptable.

8. Field notes are indexed using the BPA Consecutive Field Note Index (CFNI). The notes will be red-checked, signed, numbered, and scanned. The Project Surveyor or Land Survey Office Technician will assemble a deliverable package per BPA standards and arrange delivery to the BPA Project Surveyor.

- ***Field Verify Airborne LiDAR Data Horizontally and Vertically Along a 25-Mile Portion of Transmission Corridor***

Labor Classifications:

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician
- Land Survey Office Technician
- Clerical/Administration

Equipment:

- Robotic Total Station, data collector, GPS equipment, level.

- Fully equipped four-wheel drive survey vehicle with standard survey equipment (e.g., machetes, hammers, flagging, axes, prism poles, metal locator, compasses, handheld GPS device, laptop computer with ArcGIS and Trimble Business Center (TBC) loaded, digital camera, safety equipment, etc.)
- Cell phone/Smart phone

Methods and Approach:

1. Upon receipt of the Work Assignment, the Survey Manager will assign a QA Manager and a Project Surveyor based on project experience and availability. The Project Surveyor will communicate directly with BPA COTR, Project Surveyor or other project members to clarify scope and requirements, and then will prepare a project estimate. The estimate will be reviewed by the Survey Manager before it is submitted to the COTR.

2. The Project Surveyor will then meet with BPA staff for a project kickoff meeting to discuss specifics such as: project purpose and size, site conditions, acceptable survey methods or procedures, project datum, the proximity or availability of existing control, and the need for Geodetic Control Data Sheets and a Geodetic Control Report.

3. BPA will provide: current plan maps and photo maps (if available), PEP forms, templates for the Geodetic Control Data Sheets and Geodetic Control Report, existing data sheets for geodetic control that is desired to be included in the project control, and LiDAR data files for PLS-CADD input.

4. Survey Party Chief(s) will be provided project folders that contain pertinent PEP forms, applicable plan maps and photo maps (if available), and existing control data sheets. The project LiDAR data files will be loaded onto the DEA Party Chief's laptop to use in PLS-CADD.

5. The Project Surveyor will conduct a project kickoff meeting with field staff to discuss safety considerations, work products, protocols for communication with adjoining landowners (if any), field procedures, note keeping, and communication of field survey data to office personnel should this task require out-of-town travel.

6. Clerical/administrative staff will arrange lodging, per diem, and other travel requirements per BPA request or as the site location warrants.

7. BPA Design Engineers use LiDAR point clouds for design modeling in PLS-CADD for new transmission lines, facility upgrades, line rebuilds, etc. BPA requires that the LiDAR data accuracy be evaluated (or "truthed") against field survey measurements for confidence. Sometimes the LiDAR data that BPA has is a few years old and will need to be field verified for completeness and to identify gaps or holes that will need to be supplemented with infill surveys. Current BPA survey Bulletins and the BPA Project Surveyor are consulted for additional procedures and project specifics.

8. For a 25-mile corridor, DEA will develop an OPUS Projects GPS network for primary project control. There will be one control point at each end of the project corridor, and additional control points set at approximately 5-mile increments, for a total of six new control points. If there is an existing GPS control with known coordinate values within a reasonable distance of the project or at some point within the corridor (often found at substations), it will be incorporated in the primary project control points and used in the evaluation of network processing.

9. LiDAR truthing surveys are performed approximately every 5 miles (preferably at a public road crossings that have overhead power or telecommunications lines), and at each end of the project corridor. To

increase efficiency and to reduce the number of secondary control points that are needed for this task, it is desired to perform each truthing survey in the vicinity of the primary project control points. Secondary control for truthing surveys is set using RTK or RTN methods, with check-ins to other primary control points. It is desired that secondary control needs are identified and quantified, then as much of this control as reasonably possible is set in one effort to increase the efficiency of the crew and equipment operations.

10. Typical LiDAR truthing surveys include: approximately 8 to 12 mixed hard and soft surface ground shots, spaced 25 feet to 50 feet, and aligned beneath the center conductor of the transmission line within the corridor; and approximately 4 to 6 aerial shots on facilities or transmission structures (i.e., conductor attach points, bolts, cross arms, steel support angle points, etc.). The aerial shots and hard surface ground shots are identified in PLS-CADD by the Survey Party Chief before performing each survey, so that the survey shots are taken at locations where there is a LiDAR coordinate value for a horizontal and vertical comparison. LiDAR and survey point coordinate values are compared for confidence or anomalies. Additional shots are taken to determine whether anomalies are isolated or widespread.

11. When the field work is completed for the truthing surveys, DEA will perform the standard note checks and data processing, then the Project Surveyor or Land Survey Office Technician will prepare a BPA LiDAR Confidence Report, and populate it with the LiDAR truthing survey shots, descriptions, and the respective LiDAR points. The report automatically calculates coordinate deviations and tolerances for horizontal and vertical evaluation. The report is checked and submitted to the BPA Project Surveyor for review.

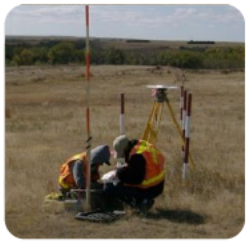
12. DEA field crews are provided with 11" X 17" copies of the existing BPA plan maps for the respective corridor. The crew performs a field walk survey to physically examine the corridor in conjunction with the LiDAR data and the existing plan maps. The crew uses a color code scheme to mark up the plan maps, identifying crossings (foreign utilities, roads, etc.) that have not changed, have been modified or removed, or are totally new, and noting whether the LiDAR is complete or needs infill surveys. Ultimately the goal is to verify that that the LiDAR is sufficient, current, and complete for design purposes and to update the plan maps.

13. When field walks are completed, the crew will perform any LiDAR infill surveys that were identified as needed in order to supplement the LiDAR. Current BPA procedures and standards are used when surveying foreign crossings to acquire the appropriate information for the Design Engineers to use.

14. When field work is completed for the LiDAR infill surveys, DEA will perform the standard note checks and data processing. Then a LiDAR input file is prepared and sent to BPA to be used by the Designers in PLS-CADD. The Project Surveyor or Survey Technician will prepare a complete BPA Foreign Crossing Report to be used for updating the existing plan maps and for the Design Engineers to reference during the design phase of the project. The report is checked and submitted to the BPA Project Surveyor for review.

15. The Project Surveyor reviews all mapping and reports, and verifies that reports have gone through the DEA Check Print review of the printed plan maps. See also the Quality Assurance (QA) and Quality Control (QC) technical procedures.

16. Field notes are indexed using the BPA Consecutive Field Note Index (CFNI). The notes will be red-checked, signed, numbered, and scanned. The Project Surveyor or Land Survey Office Technician will assemble a deliverable package per BPA standards and arrange delivery to the BPA Project Surveyor.





Section 3 | Equipment





Section 3 | Equipment



DEA's survey team has sufficient computers, printers, plotters, scanners, and peripheral equipment to produce BPA deliverables. We have been providing BPA surveying and mapping deliverables for many years without equipment constraints.

DEA's survey team in Portland is knowledgeable and familiar with **Bentley MicroStation**, **Map**, and **InRoads Version V8i**. We have been using them to produce BPA deliverables to DEA standards for many years.

DEA's Portland survey team is well along in transitioning to greater use of **Trimble Business Center (TBC)**. **Ken Murto, Liam Madigan, Russ Jackson,** and **Jon Broadwater** took a three-day course on TBC from a certified trainer on February 11–13, 2015. We are using Version 3.4 (with immediate prepaid access to the current Version 3.6.1) and we are gaining experience with the program. Apart from these employees, DEA has highly experienced users in TBC in our Spokane and Woodinville locations. This provides depth and flexibility to BPA with respect to survey data delivery.

Field Equipment

DEA strives to be as up to date with field equipment as possible. We take pride in our ability to leverage this equipment to produce high quality deliverables for BPA. DEA understands that BPA requires the use of Trimble equipment on projects, and DEA has responded by purchasing equipment and training personnel to meet the needs of BPA projects in the manner that is expected. DEA also has access to a wide variety of other instrumentation that meets or exceeds the accuracy requirements set forth by BPA that can be used when opportunities arise.

DEA's survey team has access to the following preferred equipment:

- **Seven Trimble TSC3 controllers** (data collectors) equipped with Trimble Access data collection software.
- **Four Trimble R8 GPS receivers** and **one R10 GPS receiver** with RTN, Static, Fast-Static, and RTK capabilities, compatible with TBC.
- **Four Trimble GeoXH resource grade receivers**, compatible with the current version of Trimble Pathfinder Office software.
- **One Trimble S6**, **one Trimble S7**, and **three Trimble VX robotic total stations**, with a reflectorless EDM range of 1000 feet or more (depending on surface reflectivity). They are fully compatible with Trimble Access.

Should a particular work assignment require the resources the DEA team has access to the following equipment from our California regional offices:

- **Ten Trimble TSC3 controllers** (data collectors) equipped with Trimble Access data collection software.
- **Seven Trimble R10 GPS receivers** with RTN, Static, Fast-Static, and RTK capabilities, compatible with TBC.
- **Six Trimble S6** and four **Trimble VX robotic total stations**, with a reflectorless EDM range of 1,000 feet or more (depending on surface reflectivity). They are fully compatible with Trimble Access.

DEA has a plan in place to purchase additional Trimble field survey equipment by June of 2016 when we are selected for a new contract with BPA.

In addition, DEA has access to the following equipment in our Pacific Northwest offices should it be relevant to a project:

- 43 Leica CS15 data controllers (data collectors)
- 32 Leica GS14 GPS receivers with RTN, Static, Fast-Static, and RTK capabilities.
- Nine Leica MS50, 11 Leica TS15, and four Leica 1203 robotic total stations with a reflectorless EDM range of 1000 feet or more (depending on surface reflectivity).
- Seven Leica bar code digital levels.
- Two Leica P-20 HDS laser scanners; one Leica C-10 HDS laser scanner.
- One TITAN mobile laser scanning vehicle.
- One AIMM mobile photogrammetric vehicle.

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #3: EQUIPMENT

Preferred Trimble Equipment

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	µ V8i license*	µ V8i In-Roads license*	TBC license**	Data Collectors with Trimble Access	GPS RTK receiver pair	3" total station with long range reflectorless	GPS RTN receiver	GPS Static receiver
Portland, OR	Floating	Floating	Floating	4 (TSC3)	2 (Model 3 R8)	2 (S6, S7)	2 (Model 3 R8)	4 (2 Model 3 R8, 2 Model 2 R8)
Bellevue, WA	Floating	Floating	Floating	0	0	0	0	0
Tacoma, WA	Floating	Floating	Floating	0	0	0	0	0
Everett, WA	Floating	Floating	Floating	0	0	0	0	0
Woodinville, WA	Floating	Floating	Floating	3 (TSC3)	0	3 (VX)	1 (R10)	1 (R10)
Spokane, WA	Floating	Floating	Floating	0	0	0	0	0
California Region***	Floating	Floating	Floating	10 (TSC3)	3 (R10)	10 (6 S6, 4 VX)	7 (R10)	7 (R10)
Notes								

* = DEA has an Enterprise License Subscription with Bentley Systems. This enables DEA to have as many seats as necessary, based on usage.

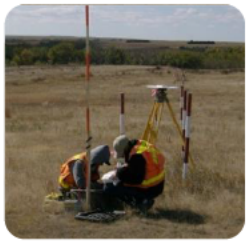
** = DEA has seven TBC licenses shared over our network.

*** = DEA has access to this equipment should a task assignment require the resources.

Optional Leica Equipment

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
			LGO license	Data Collectors	GPS RTK receiver pair	3" total station with long range reflectorless	GPS RTN receiver	GPS Static receiver
Portland, OR****			Floating	16 (CS-15)	5 (GS-14)	11 (6 TS-15, 5 MS-50)	11 (GS-14)	11 (GS-14)
Bellevue, WA			Floating	6 (CS-15)	3 (GS-14)	4 (2 TS-15, 2 MS-50)	6 (GS-14)	6 (GS-14)
Tacoma, WA			Floating	4 (CS-15)	1 (GS-14)	2 (TS-15, MS-50)	3 (GS-14)	3 (GS-14)
Everett, WA			Floating	4 (CS-15)	1 (GS-14)	2 (TS-15, MS-50)	3 (GS-14)	3 (GS-14)
Woodinville, WA			Floating	3 (RX 1250)	1 (ATX 1230)	4 (1203)	3 (ATX 1230)	3 (ATX 1230)
Spokane, WA			Floating	2 (CS-15)	3 (GS-14)	2 (TS-15, MS-50)	6 (GS-14)	6 (GS-14)
Notes								

**** = DEA has one Leica P-20 High Definition Scanner, one TITAN Mobile Scanning Unit, and one AIMM Mobile Photogrammetry Unit available from our Portland location.





Section 4 | Location/ Geographical Areas





Section 4 | Location/Geographical Areas

Survey Office Locations

DEA's headquarters office is in Portland, Oregon, and has been since our founding in 1976. We have provided surveying and mapping services from our Portland office since 1977. DEA also provides surveying and mapping services from offices in Washington: Bellevue, Everett, Fife (Tacoma), Woodinville, and Spokane, and in Idaho: Boise and Coeur D'Alene, all of which are within the BPA service area. We cost-effectively mobilize qualified field crews from multiple offices as needed to maximize working time on-site and minimize travel expenses for task assignments within the BPA service area.



From our office in Portland, we can cover northwest Oregon and southwest Washington; from our offices in Bellevue, Woodinville, Everett, and Fife, we can cover northwest Washington; and from our offices in Spokane and Boise, we can cover eastern Washington, Idaho, and western Montana. We currently do not have any survey staff stationed in our Salem and Bend Oregon office; however, the office facilities are available to support projects in these areas. We plan to use qualified field crews or crew members from nearby offices and to prepare the deliverable products in our Portland office.

DEA has five registered professional land surveyors with extensive BPA project surveyor/manager experience at the Portland office:

Kris Westersund, PLS in OR, WA, ID, MT, AK	**Steve Williams, PLS** in OR, WA, ID
Danny Denning, PLS in OR, WA, CA	**Ken Murto, PLS** in OR, WA
Greg Crites, PLS in OR, WA, AZ	

Task assignments will be managed from our Portland location to facilitate ease of communication with the BPA survey staff in Vancouver, Washington. This arrangement also will ensure that BPA continues to receive a consistent high quality product with timely delivery.

Our principal in charge is **Jeff Whitson, PLS** in **OR, WA, ID, CA, NV, UT, WY**. Our team can work under his professional supervision when working in Utah, Nevada, or Wyoming.

Field resources will be coordinated by local project surveyors working closely with the task assignment leaders: **Russ Jackson, PLS** in Portland, Oregon; **Adam LaPlant, PLS** in Bellevue, Washington; and **Duffy Haggarty, PLS** in Spokane, Washington.

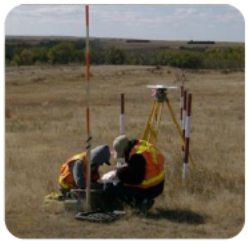
DEA has four other registered professional land surveyors at the Portland office who have assisted on BPA projects: Jon Broadwater, Sue Tsoi, Pat Smith, and Russ Jackson. Ken Murto, Russ Jackson, and Jon Broadwater are NGS OPUS-Projects certified, as a result of attending a class led by Mark Armstrong (Oregon State NGS representative) at Oregon State University.

DEA's Portland survey team is progressing well in transitioning to greater use of Trimble Business Center (TBC). Ken Murto, Liam Madigan, Russ Jackson, and Jon Broadwater attended a certified three-day course on TBC from a Trimble trainer on February 11–13, 2015. We are using Version 3.4 and gaining experience with the program. DEA's Triad Division in our Woodinville office has been using Trimble equipment and processing in TBC for some time, and our regional PLS, Duffy Haggarty in our Spokane office, has been utilizing TBC for many years.

DEA's four survey office technicians in the Portland office who are experienced in MicroStation V8i and MicroStation InRoads V8i are: Doug Malin, Edita Boguslawski, Lisa Campbell, and Jim Hagner. They are also supported by Tim Schweitzer, LSIT and Matt Savage, who have extensive 3D modeling and point cloud processing skill sets.

DEA has 14 field surveyors based in our Portland office, all of whom have experience working on BPA projects. We have also been using eight field surveyors from our Washington offices on the I-5 Corridor Reinforcement Project. Our Portland field crew schedule shows six to nine survey crews of various sizes (one, two, or three persons). Several of our field surveyors have assisted in the office supporting BPA projects.

		TECHNICAL/MANAGEMENT PROPOSAL		
		ITEM #4: LOCATION/GEOGRAPHICAL AREAS		
NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASSIFICATION PER SOW	ALTERNATE LABOR CLASSIFICATION PER SOW	COMPETENT USER OF THE FOLLOWING: (1. µV8i, 2. µV8i In-Roads, 3. TBC, 4. Trimble Access, 5. OPUS Projects)
Jeff Whitson, PLS	Portland, OR	Survey Manager	None	
Kris Westersund, PLS, PE	Portland, OR	Survey Manager	None	
Duffy Haggerty, PLS	Spokane, WA	Project Surveyor	None	1., 2., 3.
Steve Williams, PLS	Portland, OR	Project Surveyor	Survey Manager	1.
Danny Denning, PLS	Portland, OR	Project Surveyor	None	1.
Ken Murto, PLS	Portland, OR	Project Surveyor	None	3., 5.
Greg Crites, PLS	Portland, OR	Project Surveyor	None	1.
Jon Broadwater, PLS	Portland, OR	Project Surveyor	None	1., 3., 4., 5.
Russ Jackson, PLS	Portland, OR	Project Surveyor	None	3., 4., 5.
Pat Smith, PLS	Portland, OR	Project Surveyor	None	
N. Sue Tsoi, PLS	Portland, OR	Project Surveyor	None	1., 2.
Adam LaPlant, PLS	Bellevue, WA	Project Surveyor	None	1., 2.
Gil Laas, PLS, CFedS	Everett, WA	Project Surveyor	None	
Jay Bentley, PLS, CFedS	Ontario, CA	Project Surveyor	None	1., 2.
Erik Brewster, GISP	Portland, OR	GIS Analyst	None	
Edita Boguslawski	Portland, OR	Land Survey Office Technician	None	1., 2.
Doug Malin	Portland, OR	Land Survey Office Technician	None	1., 2.
Liam Madigan	Portland, OR	Land Survey Office Technician	None	1., 2., 3.
Lisa Campbell	Portland, OR	Land Survey Office Technician	None	1., 2.
Tim Schweitzer, LSIT	Portland, OR	Land Survey Office Technician	None	1., 2.
Jim Hagner	Portland, OR	Land Survey Office Technician	None	1., 2.
Kyle McNaught-Davis, LSIT, EIT	Spokane, WA	Land Survey Office Technician	Land Survey Office Technician	1., 2.
Robert Johnson, LSIT	Woodinville, WA	Cartographic Technician	Land Survey Office Technician	1., 2., 3.
Matt Savage	Portland, OR	Cartographic Technician	Land Survey Office Technician	1., 2.
Erich Hiersche	Boise, ID	Survey Party Chief	None	1., 3., 4.
Deane Blair, LSIT	Portland, OR	Survey Party Chief	None	4.
Chad Nelson, LSIT	Portland, OR	Survey Party Chief	None	4.
Keith Lyman, EIT	Portland, OR	Survey Party Chief	Survey Technician	3., 4.
Joe Gigliotti	Portland, OR	Survey Party Chief	None	4.
Ian Marx	Portland, OR	Survey Party Chief	Survey Technician	4.
R. David Williams, LSIT	Bellevue, WA	Survey Party Chief	Survey Technician	4.
Mark Smith	Spokane, WA	Survey Party Chief	Survey Technician	4.
Josh Miller	Spokane, WA	Survey Party Chief	Land Survey Office Technician	1., 2., 3.





Section 5 | Safety





Section 5 | Safety



This general safety plan is based on DEA's experience providing surveying and mapping services to BPA, and is based on the safety plan for our current master services contract. Projects are located throughout the BPA service area, primarily in Oregon, Washington, Idaho, and Montana. They include surveys for rebuilding and upgrading transmission lines, right-of-way surveys, boundary surveys, topographic surveys, and surveys for access roads, among others. Tasks involve surveying and mapping in urban, rural, and remote sites over varying terrain with many types of hazards.

Most identified safety hazards are related to field work and travel. This plan is meant to serve as a guide for avoiding accidents and following required procedures.

DEA is mandated and/or its employees are mandated to conform to the requirements of BPA's Accident Prevention Manual; BPA's Safety and Health Program including BPA's footwear requirements; and those provisions included in FY2015 Combined Required Training, BPA Master Contract 00042683 with DEA for Surveying Services, Occupational Safety and Health Administration (OSHA) regulations, Access Agreements with certain property owners, DEA's own Health and Safety Manual, and other regulations.

Policy Statements

"No job is so important and no service so urgent that we cannot take time to perform our work safely." —BPA Safety Motto.

"Safety, and the concern for safe working practices, shall never be slighted or ignored in the interest of production." —BPA Master Contract 00042683 with DEA for Surveying Services.

Communication

Field crew safety is discussed on Monday mornings at the Field Crew Coordination Meeting at DEA's Portland office. DEA's project surveyor for each task lists any known project-specific concerns and gives instructions to the field crews. The field crews hold a tailgate safety meeting every morning or as needed to highlight site specific concerns or changes in field conditions, and document them in their field reports.

DEA provides annual on-site first aid and CPR training. All field personnel are required to attend and maintain current first aid cards.

Risks

Here are some identified hazards and mitigation steps:

Driving

Driving hazards include other drivers, road conditions, log trucks, and long drives.

- Use safe driving practices including defensive driving.
- Do not text or use a handheld phone while driving.
- Rotate drivers or stop to rest as needed to stay alert.
- Drive cautiously on primitive or remote roads. When in doubt, walk.

- Provide spotters while backing up and park in areas where views are unobstructed.
- Slow down and watch out for log trucks on forest roads. Follow instructions on signs or other communication regarding use of CB radios.
- All vehicles are equipped with first aid kits, fire suppression tools, safety signs, safety cones, flashing lights, flashlights, tire chains, tow straps, and other equipment as conditions warrant.

Site Specific Hazards

The hazards of each site should be discussed early and often.

- Know your surroundings by being aware and always looking first.
- Safety vests will be worn at all times outside of vehicle.
- White hard hats are available in the truck and will be worn when needed or required.
- Work boots are required and must conform to BPA footwear policies (copies of policy provided upon request).
- Identify a specific meeting location in advance, should an emergency occur.
- Use cell phones for emergency communications and to communicate additional site-specific hazards.
- Falls cause many injuries. Keep eyes alert for tripping and slipping hazards while walking.
- Avoid heat stroke or exhaustion. Drink water (stay hydrated) and monitor coworkers.
- While moving heavy items, lift with your legs, not your back, or use two people, if necessary.
- DEA approved training is required before operating ATVs. Always wear helmets, avoid side slopes, and don't go over 10 mph.
- All personnel will check in with the Chief of Parties or other field supervisor every night to confirm that they have returned from the field.
- Most, if not all, large industrial forestry companies have their own safety plans in place and require specific training before they will allow DEA employees to work on and/or travel over their lands. Our project managers coordinate this training with their staff, publish their contact information, and make sure that each of our employees understands and adheres to their contact protocols and specific travel conditions. To demonstrate our regard for stewardship, we make a point of letting the forestry company safety officers know of unsafe conditions that our personnel may encounter while traveling or working on their property.

Fire

Fires present a very large risk of damage, loss of life, and liability to DEA and others. Fire hazards include those caused by vehicles, equipment, and smoking.

- DEA's Chief of Parties will monitor fire precaution levels and restrictions.
- Each party chief will check that fire extinguishers and required fire suppression equipment are ready for use before starting work and at least weekly.
- Avoid parking where vegetation may be in contact with catalytic converters, etc. Avoid driving in tall grass when it may accumulate under the vehicle and start a fire.
- Smoking is not allowed in DEA vehicles and where it is unsafe or otherwise prohibited.
- Be aware of the site evacuation plan and meeting points.
- When fire danger is high, obey published restrictions.

Electrical Facilities

The primary electrical hazards are from BPA and other power lines, and from substation equipment.

- Stay away from down power lines.
- Maintain Minimum Approach Distances (10 to 19 feet depending on type). In particular, watch the

overhead clearance to survey rods and other survey equipment that can conduct electricity.

- In substation yards, orange vests are for Safety Watchers only. DEA personnel will not wear orange vests there.
- Two or three DEA field surveyors are authorized for unescorted access to substations. They have been trained and are tested every two years. If they are escorting you, obey their instructions and ask for guidance if you have questions about safe practices.
- Tailgate safety meetings are required each morning before entering a BPA Energized Facility.

Brush Cutting

Our primary tools to cut brush are machetes and chain saws. Both can be dangerous.

- Wear safety glasses, gloves, and approved leg protection when using machetes.
- Place machetes in scabbards when not in use.
- When using chainsaws, wear all required personal protection equipment including chaps, hard hats, gloves, hearing protection, face protection, and safety glasses.
- Clear trip hazards when cutting brush and do not leave sharp points. Cut stems square.
- Keep machetes, chain saws, and other brushing equipment sharp and in good repair.
- Gloves will be worn when conditions warrant.
- Be aware that branches and stems may move or spring back without warning, possibly striking the worker or deflecting a machete or chainsaw.

Weather

- Avoid forested areas during high winds. Leave the woods if branches or trees begin to fall.
- If lightning is observed nearby, retreat to a vehicle or sheltered location (but not under a large tree) until the threat is passed.
- Be alert for flooding and washouts on forest roads and bridges.
- When encountering washouts or overflowing culverts while traveling, note the specific location on the crew report, preferably with geographic coordinates using the handheld GPS units supplied to each of our field crews.

Biota

- Snake bites are not usually a problem on the west side of the Cascades, but timber rattlesnakes can be common on the east side. Do not place your hands or feet where you cannot see.
- Beware of insect nests and stay clear. Wasp spray is available for nests that cannot be avoided.
- Ticks can carry Lyme disease, Rocky Mountain Spotted Fever, and other pathogens. Avoid brushing against bushes, use a repellent such as DEET, and inspect clothing and skin at the end of every workday, especially in warmer months when ticks are most active.
- Poison oak is common at many sites. Avoid contact, wear protective clothing, and use ointments as applicable.
- Avoid surprising bears and other large animals. Make some noise when you suspect they may be nearby.
- Firearms are prohibited in DEA vehicles or on DEA worksites.

Property Owners and the Public

- Strive to maintain good relations with property owners and the public. Let them know your intentions. Offer your business card and refer them to project leaders for information when appropriate.

- DEA employees have been injured by a property owner's dog. Even a friendly looking dog can become protective and bite. Do not put your face or hands near or turn your back to a strange dog. If you suspect even a remote risk, ask the owner to restrain the animal so that you can safely work in the area.

Police Emergency

These are situations involving actual threats of physical violence, assault, menacing and intimidating behavior, brandishing of weapons (threatening display of firearms, etc.), discharging of firearms, or other criminal behavior.

- Leave immediately and, if appropriate, call 911 when it is safe to do so.
- If a vehicle is involved, get license number(s).
- See reporting requirements below. It is important to let others know so they can avoid the danger.

Safety Roles and Responsibilities

Each person is ultimately responsible for his or her own safety; but everyone should also watch out for each other. Therefore, everyone is required and empowered to stop work anytime an unsafe act or situation is observed. Every worker has a right to decline unsafe tasks or to ask for a review of perceived unsafe work procedures, and has a responsibility to notify other workers of imminent danger.

- DEA's project manager is responsible for this safety plan and for seeing that DEA's procedures comply with BPA's contract with DEA.

- The DEA Chief of Parties is responsible for coordinating weekly meetings, one-on-one meetings with field surveyors, and response to any safety violations. He will monitor and communicate restrictions when the fire danger is high. He will also notify BPA of incidents and submit required reports.

- DEA party chiefs will be responsible for safety on-site, including identifying site-specific and task-specific safety concerns, holding and documenting tailgate meetings, instructing and maintaining safe work procedures and environments, and responding to incidents.

- BPA Contracting Officer's Technical Representative (COTR) will receive notice of any incidents.

Incident Reporting | All survey crew incidents, no matter how minor, will be recorded and reported to the DEA Chief of Parties. The DEA survey manager will also be informed. Incidents must be reported as described below, per DEA's contract with BPA.

Contacts

Russ Jackson DEA Chief of Parties (503) 499-0364 office (503) 708-1017 cell rrj@deainc.com	Kris Westersund DEA Project Manager (503) 499-0277 office (503) 708-1029 cell krw@deainc.com	Jeff Whitson OR Survey Manager (503) 499-0299 office (503) 708-1030 cell jsw@deainc.com	Pat Hastings BPA COTR (360) 619-6506 office (360) 524-1218 cell pjhastings@bpa.gov
Greg Harbeson BPA COTR (360) 619-6988 office (360) 836-2432 cell glharbeson@bpa.gov	Tracey Albright Contracting Officer (360) 619-6077 taalbright@bpa.gov	BPA Safety Office (360) 418-2397 (7AM-4PM or message) SafetyNotification@bpa.gov	BPA Alarm Monitoring Station (360) 418-2080 (24 hours)

Police Emergency

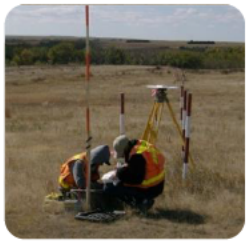
Within one hour, report the incident to your supervisor and the appropriate local law enforcement agency (sheriff, police, federal police, tribal police, etc.). If the transmission system could be affected, call BPA Power System Dispatchers at 1-800-392-0816. Complete a BPA Security Incident Report (BPA Form 5632.01). The Chief of Parties will submit it to the BPA COTR and Contracting Officer (CO) within 24 hours. For assistance, call BPA Alarm Monitoring Station at 360-418-2080 at any hour.

Death, Injury, Occupational Disease, or Near Miss

Immediately report the incident to the Chief of Parties. He will immediately notify BPA's CO and COTR, and call the BPA Safety Office, leaving a message if there is no answer. The Chief of Parties will also send an email to SafetyNotification@bpa.gov immediately for fatalities or within 24 hours for other reports.

The Chief of Parties will complete BPA Form 6410.15e (Contractor's Report of Personal Injury, Illness, or Property Damage Accident) or BPA Form 6410.18e (Contractor's Report of Incident/Near Miss) to the CO, COTR, and Safety Office within five working days of such occurrence.

Each incident will be reviewed by DEA to determine corrective actions. Lessons learned will be shared in our safety meetings.



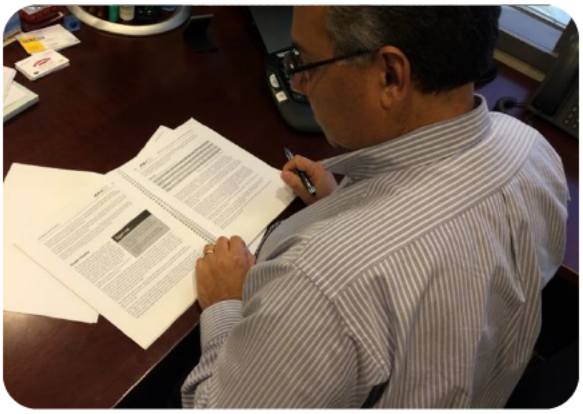


Section 6 | Quality Assurance and Control





Section 6 | Quality Assurance and Quality Control



DEA views Quality Assurance (QA) and Quality Control (QC) procedures as an integral part of successful projects, and therefore utilizes review and tracking procedures from the beginning to the end of every project. The DEA Project Manager assigns a project QA/QC Manager for every project, and a meeting is held to discuss project specifics and prepare a QA/QC plan. This plan identifies key personnel and their responsibilities on the project. The DEA project team also meets with BPA project team members to verify project intent, specifics, and details. DEA utilizes the current version of the BPA Surveying Manual and Land Acquisition & Mapping Manual, which contain procedures, examples, and specific deliverable checklists. Survey field notes are typically checked, and data is reduced on a daily basis in an effort to stay on top of progress, and verify that field work meets appropriate accuracies and Scope of Work requirements. Some specific examples of DEA procedures are as follows:

1. **Static, RTK, RTN, and Differential GPS Use.** Before performing any initial GPS work, DEA verifies the datum and units that are required for the project. When setting and running GPS control, DEA adheres to industry standards utilizing cross-ties, redundant measurements, and multiple non-consecutive observations (adding the benefit of independent satellite geometry), and number of satellites. When possible, "known" or "published" GPS control points are integrated into control networks to aid in checking the accuracy of the network during data processing. Control points are typically placed in areas that have as much open sky visibility as possible and that are least likely to be influenced by signal degradation issues such as multipath. Ideally, this will be safely away from vehicle and foot traffic, and will be on solid ground or on a solid surface. When using GPS control for survey work, DEA's daily field procedures include check-in measurements to at least one other GPS control point. This helps verify that the control mathematically fits and determines whether a control point has been disturbed. This procedure is implemented at the beginning and at the end of each work day and/or each time a GPS point is used, in order to help reduce the risk of collecting inaccurate survey data. If a point is used all day, additional check-ins are desired to verify that weather, equipment batteries, site conditions, or other outside circumstances have not disturbed the accuracy of the survey work being performed. When using resource grade GPS, redundant measurements are taken for repeatability. If Geodetic Data Sheets and/or a Geodetic Control Report for Survey Control are prepared, they are checked by an independent reviewer using DEA's Check Print review stamp process, as discussed below.

2. **Staking Structures for Construction.** DEA reviews design information to verify that stations and deflection angles match between the design maps, structure lists, spreadsheets, PLS-CADD, MicroStation drawings, and alignment reports, before performing any field work. The survey crew verifies that the control is acceptable for use before beginning staking, and then performs their staking work in accordance with the project Statement of Work, the BPA Surveying Manual, and as directed by the BPA Project Surveyor. Stakes set for construction are generally placed where they are not likely to be disturbed and where they may be safely used during construction activities. Photos are taken of all stakes, so that information written on them can be verified when the field notes are checked. BPA typically requires a POT/BM list for monument stakes set on a design alignment. After field notes and survey data are checked and verified for accuracy, the POT/BM list is prepared and then checked by an independent reviewer using DEA's Check Print review stamp process, as discussed below.

3. **Earthwork Staking.** DEA reviews design information to verify that the design Digital Terrain Model (DTM) is on the correct project datum and in the correct units, and compares it to other project drawings and design information for continuity prior to use. Any calculations made by a survey field crew are checked as soon as possible for efficiency and to minimize costly return trips to job sites.

4. **Topographic Surveying.** DEA verifies topographic surveying and mapping limits before performing field work. Field notes and data are checked as they become available, to monitor progress for efficiencies, coverage, and completeness, and to identify gaps or areas that may need additional mapping. The DEA Project Surveyor oversees the survey and mapping as it is performed, to verify that it meets project requirements. When initial mapping is completed, a printout is given to the crew that performed the field work so the crew can review it for completeness. When mapping is completed, a check is performed to verify that all lines and symbols are drawn on the proper BPA MicroStation level with proper line type and line weight. If a DTM is prepared, another Mapper will review it for holes and/or spikes. The DEA Project Surveyor usually performs a full mapping review using DEA's Check Print review stamp process, as discussed below.

5. **Boundary Surveying.** DEA verifies the desired limits of any boundary survey before any work is performed. Field notes and survey data are checked as soon as they are available. Certified title reports (if applicable and as provided by BPA Realty) are thoroughly reviewed and marked up digitally for the applicable boundaries and acquisitions. The Project Surveyor's initial boundary resolution goes through a short peer review to check for obvious discrepancies or errors, and to confirm sound surveying practices. The draft version of the Record of Survey is prepared, is then checked by an independent reviewer using DEA's Check Print review stamp process as discussed below, and is then submitted for BPA review for input and verification that it continues to meet project requirements. If revisions or modifications are requested by BPA, the mapping will be updated, and the final draft will go back through DEA's Check Print review stamp process to ensure that all revisions and modifications were made, before setting monumentation and filing the survey with the appropriate county.

6. **Preparing Legal Descriptions with Exhibits from Provided Deeds and Title Reports.** Certified title reports are provided by BPA Realty. DEA thoroughly reviews and marks them up digitally for use while preparing acquisitions. BPA acquisition checklists are used by the document preparers to verify that applicable information is used. A draft copy of an acquisition document (with cover sheet, legal description, exhibit, and/or plan map) goes through DEA's Check Print review stamp process, as discussed below. The supplemental documentation, including the Surveyor's Narrative and all marked-up documents, is examined for thoroughness and completeness. The document is compared to the base map to verify bearings and distances, etc. The DEA checker then uses the BPA acquisition checklist to verify that the document meets standards and that the document is complete as marked off by the preparer. If revisions or modifications are requested by BPA, the document and mapping will be updated, and the document will again go through DEA's Check Print review stamp process to ensure that all new revisions and modifications are made before resubmittal. On larger projects, DEA will submit one or two sample documents to verify conformance with the current BPA standards and the project acquisition Land Surveyor preferences.

7. **Creation of New Plan and Profile Maps, and Updates.** Updating or creating new plan and profile maps involves good communication with BPA Survey and Mapping to verify that both survey needs and mapping needs are met. When updating existing plan and profile maps, all new information that is added (acquisitions, revisions, design mapping, etc.) goes through DEA's Check Print review stamp process, as discussed below, to verify that it is correct, that it matches the respective acquisition or design documents and drawings, and that the revision block information has been updated correctly. New plan and profile maps are checked the same way. However, because everything is new, every detail gets verified for accuracy

and completeness, and it is confirmed that the design information matches the design documents and drawings. In each case, the DEA checker also uses the respective BPA checklist for plan or profile maps.

8. **Establishing and Verifying Horizontal and Vertical Project Control.** BPA has well-established field and office procedures for setting and verifying project control, as indicated in the BPA Surveying Manual. Field procedures are monitored by the Project Surveyor to make sure that they comply with industry standards, BPA procedures for closed loop traverses, double ties for side-shots/fly-points, and any project-specific requirements as requested by the BPA Project Surveyor. Specific tolerances for check-ins are monitored by the survey Party Chief as field work is being performed and by the field note checker as the notes are being checked in the office. If a BPA computation sheet is used to create coordinates for control, DEA uses the Check Print review stamp process as calculations are checked and verified. Often GPS control is set as the primary project control (see "Static, RTK, RTN, and Differential GPS Use" above for procedures relating to GPS control). As with using GPS control, all horizontal and vertical control is verified prior to use for surveying and mapping purposes. When a control point with known coordinates is occupied, check-in measurements are made to one or more other control points with known coordinates. This procedure will confirm that the project control being used has not been disturbed, that coordinated relationships are accurate, and that the control is sufficient for further field work. Before completing work from a control point, another check-in measurement is made to verify that the instrument has not been disturbed. If a point is occupied for long periods of time, then additional check-ins are desired, because site conditions and weather can affect the instrument, and tripods can settle, causing the instrument to no longer be level. The equipment operator records any observable anomalies in the field notes to aid in evaluation and processing of measured data. These procedures allow the field crew to isolate errors caused by equipment that is out of level, and to minimize potential rework and costly return trips to a job site.

9. **Preparing Progress Reports.** BPA Survey and Mapping provides a Status Report template to be updated and submitted weekly or biweekly (project-specific) on BPA projects. DEA uses the Statement of Work provided for the respective Work Assignment to list overall project deliverables, target dates, and related specifics. It identifies key BPA personnel for the project, the reporting period, and tasks assigned or delivered during the reporting period. The user can account for work performed by field and office personnel, and anticipated assignments for the next reporting period, and list issues that may affect project scope, schedule, and budget (e.g., denied access to property, design complications, lack of certified title, etc.). If requested, the report can also be used to track percent complete and dollars spent to date. DEA Project Surveyors rely on this document for keeping track of project details and communicating them to BPA personnel.

As mentioned above, DEA uses a Check Print review stamp for all hard copy documents, maps, etc. When a document is ready to be reviewed, it is printed and stamped for review. The process is as follows:

A. **Checker:** The checker (Project Surveyor, Mapper, QA Manager, Certified Checker, Independent Reviewer, etc.) places a blue check mark on all items that are checked and verified for accuracy. Red lines/marks are placed where edits or revisions are needed. When the document has been completely reviewed, the reviewer then initials and dates the Check Print stamp.

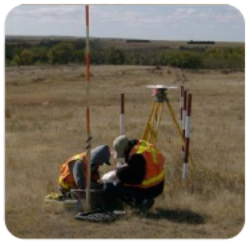
CHECK PRINT	
☐ Drawing checked against calcs, and calc check confirmed	
Checker:	Date:
Confirmed by:	Date:
Edited by:	Date:
Backchecker:	Date:

B. **Confirmed by:** The document preparer reviews and confirms the edits and revision red lines, and then initials and dates the Check Print stamp. If alternative revisions are agreed on or added, the confirmer will use a green pen or pencil to place revisions to the checker's red lines.

C. **Edited by:** The person(s) responsible for making the edits or revisions will use a yellow highlighter to mark over the top of each red line as it is addressed. When completed, the editor will print a fresh copy of the revised document, initial and date the Check Print stamp, and provide both the review copy and the fresh copy to a backchecker. For efficiency, this is typically the same person who was the checker.

D. **Backchecker:** The backchecker will use a blue highlighter to mark over the top of every yellow mark as each addressed red line edit is verified. The concept is that, because yellow and blue make green, and green is associated with "go," then the document edits are complete if all revision red lines are green. The document is ready to be published or submitted.

E. All review stamp documents are scanned in color and kept digitally as a backup. When revisions come from BPA, they go through DEA's Check Print review stamp process to ensure that revisions are addressed. The reviewed and backchecked copy is scanned in color, and submitted to BPA with the revised deliverables.





Section 7 | Past Performance





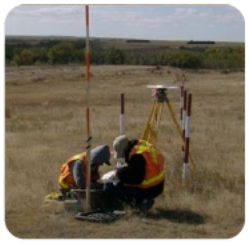
Section 7 | Past Performance

Shown below are references for the survey project work that we have performed here at DEA. Please feel free to contact any of these individuals for additional information on the services and projects we have performed for them.

Bonneville Power Administration
Mr. Jay Conant, PLS
Manager, Surveying and Mapping
jdconant@bpa.gov
(360) 619-6512
Project Experience | *On-Call Surveying and Mapping Services for approximately 22 years*

HDR Engineering, Inc.
Mr. Michael A. Cooney, PLS
Survey Manager
Michael.Cooney@hdrinc.com
(503) 423-3764
Project Experience | *Surveying and Mapping services for the BPA I-5 Corridor Reinforcement Project and the BPA Big Eddy – Knight Project*

Portland General Electric
Mr. Jeff Danielson, PLS, CWRE
Survey Manager
jeff.danielson@pgn.com
(503) 464-8149
Project Experience | *Surveying and Mapping Services for Preliminary Cascade Crossing project, Biglow Canyon Wind Farm ALTA Survey, Sandy River Marmot Dam Removal*





Section 8 | Subcontracting Plan





Section 8 | Subcontracting Plan

DEA is aligned with BPA in supporting small businesses and small disadvantaged business enterprises. We often work with such partners to accomplish our projects. For some projects, they provide us specialized services; for others, we serve as their mentors. As part of our outreach program, we have hosted several "Small Business Fairs" to introduce these businesses to our project managers.

However, the nature of this master contract does not offer significant preplanned subcontracting possibilities, because:

- The quantity of work is indefinite.
- The specific project type is indefinite.
- Many projects are expected to be on a very tight schedule.
- According to the proposed contract, BPA must approve subcontracting, and there is often insufficient time to do so.
- There are few or no discrete work scopes to be subcontracted.
- BPA can support small businesses by contracting directly for small projects such as property surveys, and has done so.
- Small, short-term tasks such as traffic control or utility marking may be performed by small businesses, but it is most convenient to account for the costs as expenses, rather than through subcontracting. DEA plans to continue this practice.

DEA proposes that we reconsider this issue for individual releases or work assignments, when practicable.



DAVID EVANS
AND ASSOCIATES INC.

www.deainc.com
800.721.1916

Social Connections



DAVID EVANS
AND ASSOCIATES INC.

January 18, 2016

Bonneville Power Administration
Attention: Tracey Albright, Kristi Carter, and the Offer Evaluation Team

RE: RFO 3553 Professional Survey and Mapping Services

Dear Selection Committee:

David Evans and Associates, Inc. (DEA) is excited about the great opportunity to submit our qualifications and experience for this contract. DEA has been working for Bonneville Power Administration (BPA) for most of our corporate history, which includes providing services on more than 450 projects since 1984. This letter is a chance for us to express our appreciation for our relationship and the many opportunities we have had to be a part of your mission. We are eager to continue to work with the BPA's Survey and Mapping team and with your other survey and mapping contractors.

A part of BPA's mission is the reliable and efficient delivery of electrical power, consistent with good stewardship. DEA's core ideology, experience, and capabilities are well suited to assist you. Working alongside your staff, we are proud to have provided survey and mapping services for many successful projects including the recently energized Big Eddy – Knight Transmission Line. Although much has been accomplished, our understanding of BPA's long range plan indicates that much work remains to update and maintain your infrastructure, and we want to help.

Survey and mapping are needed to provide data and documents for the permitting, design, and rights acquisition processes. Because DEA is currently providing survey and mapping services to BPA, we understand the methods and the standards to use. More than that, we are in tune with other considerations including safety, security, relations with the public and property owners (including large timber companies), contractual compliance, environmental protection, efficiency, and respectful collaboration with BPA.

DEA has a large survey staff in the region who have BPA experience. We plan to continue to manage projects out of our Portland office, with survey crews and local coordinators strategically located in the Puget Sound area, Spokane area, and Boise that can provide cost-effective field survey support in Oregon, Washington, Idaho, and western Montana.

Kris Westersund, PE, PLS, CWRE and our lead project surveyors will collaborate with your staff to understand the intent and reason for each work assignment, and to clarify expectations of procedures to be used and deliverables to be provided to complete the work. We will focus on communication with the COTR and BPA project surveyors in preparing scopes, schedules, and budget; having kickoff meetings; and tracking project progress so that we can be accountable to the scope, budget, and schedule. DEA staff members are always looking for ways to do things better or more efficiently, such as improving a spreadsheet template or implementing new technology to collect accurate data faster. We will bring these ideas to your staff to see whether they are appropriate to use within BPA procedures. Our goal is to provide BPA top quality, cost-effective services, and deliverables, meeting your needs and following your standards.

Steve Williams, PLS will manage the largest and most complex projects. Steve managed DEA's surveying on the Big Eddy – Knight Project from 2011 to 2015 and has been involved in many BPA acquisition projects. He will be supported by two other project surveyors with extensive BPA experience: Danny Denning, PLS, and Ken Murto, PLS. Danny has developed particular expertise as an Acquisition Land Surveyor and, working with Kelly Miller, coordinates our work on communication sites. Ken is an expert on control surveys, including substation baseline modernization and slide monitoring projects. They are supported by six additional project surveyors, eight lead survey office technicians, a GIS analyst, and 12 survey crews with BPA experience, as shown on the Organization Chart included as part of our offer.

Kris will continue to serve as survey/contract manager, working to keep our work in sync with the contract, releases, notices to proceed, and BPA policies. Kris's efforts include keeping BPA's COTR informed of progress, budget, and possible changes to our scope of work.

Jeff Whitson, PLS is our regional survey manager and will act as principal in charge. He will support our services under this contract by providing the resources needed. He is also a licensed Land Surveyor in seven of the eight states in BPA's Service Area, which between Kris and Jeff, gives DEA professional licenses in all eight states. Our signatures represent DEA's commitment to provide the resources needed under this contract. Furthermore, our services to BPA have the full support of Al Barkouli, Ph.D., P.E. Chairman and CEO of DEA.

This offer is valid for 120 days from the date above. We trust that it indicates our appreciation, ability, and commitment for the opportunity to provide survey and mapping services to BPA.

Sincerely,

DAVID EVANS AND ASSOCIATES, INC.

(b) (6) [redacted]

Kristen R. (Kris) Westersund, PLS, PE, CWRE
Vice President

(b) (6) [redacted]

Jeffery S. Whitson, PLS
Vice President

RFO 3553 AMENDMENT 001
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 11, 2015

The purpose of this modification is to revise the Instruction to Offerors, Attachment 001 and incorporate submitted contractor clarification questions and BPA responses.

A. Revise Instruction to Offerors, Submission of Offers as follows:

All offers shall be sent via email by January 4, 2016, no later than 3:00 PM to Kristi Carter at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov. No communication is authorized between the contractor and Bonneville Power representatives or employees other than the Contracting Officer's Representative, Tracey Albright, and the Contracting Officer's Assistant, Kristi Carter. Clarification questions may be submitted via email to Kristi Cater at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov no later than December 21, 2015, 3:00 p.m. PDT. Answers to clarification questions will be posted as an amendment to the solicitation via email to all potential offerors. If you decide not to submit an offer, it is requested that you contact Kristi Carter and Tracey Albright.

B. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 8 SUBCONTRACTING PLAN, as follows:

Provide an estimated dollar amount or percentage of work that may be awarded to subcontractors who are one of the supplier diversity program categories, or (2) a statement, with supporting reasons, that the nature of the contract does not offer subcontracting possibilities; state which disciplines would be performed in-house by your company and which may be assigned to subcontractors, if any. Identify qualifications of all subcontractors proposed, company name and key personnel. (Note: A detailed Subcontracting Plan may be required at time of award if applicable.

C. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 4 PAST PERFORMANCE A, as follows:

BPA focuses on information that demonstrates quality of performance relative to the complexity of the procurement under consideration. The offeror's references will assist BPA in collecting this information. References other than those identified by the offeror may be used by BPA. All such information may be used in the evaluation of the offeror's past performance.

D. Incorporate the following submitted contractor clarification questions, and BPA responses.

CONTRACTOR QUESTION #1: The subcontracting information on Attachment 1, page 6 appears to conflict with the instructions on Attachment 1, page 5: (page 6), please advise of the requirement.

BPA RESPONSE: See Item B in Amendment 001.

CONTRACTOR QUESTION #2: Attachment 1, page 5, item (4) Past Performance – requires the use of the "attached" Past Performance Reference Form. However, the form is not attached. Could you direct me to the correct form?

BPA RESPONSE: Refer to Item C in Amendment 001.

CONTRACTOR QUESTION #3: Is it permitted to use BPA projects and references/personnel on the Past Performance section/form? Or should all of the Past Performance project be from non-BPA clients?

BPA RESPONSE: BPA references are acceptable.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: David Evans and Associates, Inc.
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: January 7, 2016

RFO 3553 AMENDMENT 002
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 30, 2015

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. The offer due date has been extended to January 11, 2016 at 3:00 PM.

B. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: Under Professional Qualifications – Item 1 references the person in responsible charge but also references the resumes of key personnel and states recent projects that they have overseen. Does this include Project Managers and Project Surveyors only or does it also include other key personnel that have managed key portions of a project?

BPA RESPONSE: Yes, Key Personnel are those individuals filling positions that oversee the whole project and/or specialized tasks of the project: Survey Managers, Project Surveyors, PLS's/RLS's, Survey Party Chiefs, and Land Survey Office Technicians.

CONTRACTOR QUESTION #2: Are examples of past projects desired or not?

BPA RESPONSE: Yes, the resumes should refer to past projects to address size, scope, and responsibilities and convey the Key individual's experience.

CONTRACTOR QUESTION #3: Does BPA have a preference of the type of electronic files (PDF, Word, etc) to be submitted? Is there a limit to file size?

BPA RESPONSE: The vendor can submit their responses to the RFO in either a PDF or Word format. The RFO 3553 Business Workbook and Technical Workbook shall be submitted in both the native Excel format and a PDF copy. The BPA email system has a limit of 10 mb's.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: David Evans and Associates, Inc.
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: January 7, 2016

RFO 3553 AMENDMENT 003
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 4, 2016

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. The offer due date has been extended to <u>January 18, 2016 at 3:00 PM.</u>

B. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: Are we to add specialized equipment rates – i.e., ATV's, boats, UAV's, scanners, etc. – to the Business Workbook or leave them out altogether?

BPA RESPONSE: ATV's are a common specialized equipment that are regularly required to perform BPA work and can be added to the Business Workbook spreadsheet. All other specialized equipment will be priced out on an as needed basis at the time of a contract release or work assignment.

CONTRACTOR QUESTION #2: Is the selection panel the same for the RFO solicitation as it was for the SOQ solicitation?

BPA RESPONSE: The evaluation team is the same for the RFO as was for the RFQ, but the selection by the Contracting Officer, or Contracting Office, is based on evaluation team recommendations.

CONTRACTOR QUESTION #3: Can we add the requested equipment brand names and model numbers to the provided spreadsheet or would you like a separate spreadsheet with this information?

BPA RESPONSE: Yes, manufacture names and model names/models can be included in the Technical Workbook / Equipment worksheet for survey field equipment.

CONTRACTOR QUESTION #4: Please clarify under Technical Approach bullet one, is an "existing heavily wooded Substation Parcel" an existing substation to be expanded or just and existing parcel for a new substation?

BPA RESPONSE: This task should be interpreted as a Boundary and Topographic Survey for an expansion of an existing BPA substation on to an adjacent heavily wooded BPA fee owned parcel that is not physically delineated and monumented.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: David Evans and Associates, Inc.
Signature (by person authorized to sign): (b) (6)
Date signed: January 7, 2016

RFO 3553 AMENDMENT 004
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 12, 2016

The purpose of this amendment is to incorporate a submitted contractor clarification question and BPA's response.

A. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: We anticipate that allowing more than one pricing sheet will provide positive pricing for BPA by using subcontractors that are closer to work in some of your service areas. Will BPA accept different pricing workbooks, to reflect ours and our subs information, or do we need to develop one set of rates that will work for our entire team (prime and subcontractors)?

BPA RESPONSE: Vendors should only submit what has been requested in the "Instruction to Offerors" section of RFO 3553, but we can accept the submittal of additional Technical and Business Workbooks for subcontractors/partners. Each Prime Vendor must still have meet the Personnel requirements set out in the RFO without including subcontracting staff.

At a minimum, a core team comprised of the following personnel is to be available for BPA projects.

- Three Professional/Registered Land Surveyors licensed in one of the primary states within BPA's service area (Montana, Oregon, Idaho, & Washington) to act in a project surveyor and/or professional capacity. Each core team having licensees/registrants in two states within BPA's primary service area: Montana, Oregon, Idaho, & Washington.

- Two survey field crews: a two-person and a three person crew that can also act in the capacity of an office resource in assisting the PLS/RLS in research and processing/adjusting survey field data.

- Three survey office technicians for processing field data, creating reports, and CAD survey mapping duties; creating/updating survey and plan/profile maps.

- One staff member that is NGS OPUS-Projects certified.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: David Evans and Associates, Inc.
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: January 12, 2016

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #3: EQUIPMENT

Preferred Trimble Equipment

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	μ V8i license*	μ V8i In-Roads license*	TBC license**	Data Collectors with Trimble Access	GPS RTK receiver pair	3" total station with long range reflectorless	GPS RTN receiver	GPS Static receiver
Portland, OR	Floating	Floating	Floating	4 (TSC3)	2 (Model 3 R8)	2 (S6, S7)	2 (Model 3 R8)	4 (2 Model 3 R8, 2 Model 2 R8)
Bellevue, WA	Floating	Floating	Floating	0	0	0	0	0
Tacoma, WA	Floating	Floating	Floating	0	0	0	0	0
Everett, WA	Floating	Floating	Floating	0	0	0	0	0
Woodinville, WA	Floating	Floating	Floating	3 (TSC3)	0	3 (VX)	1 (R10)	1 (R10)
Spokane, WA	Floating	Floating	Floating	0	0	0	0	0
California Region***	Floating	Floating	Floating	10 (TSC3)	3 (R10)	10 (6 S6, 4 VX)	7 (R10)	7 (R10)

Notes

* = DEA has an Enterprise License Subscription with Bentley Systems. This enables DEA to have as many seats as necessary, based on usage.

** = DEA has seven TBC licenses shared over our network.

*** = DEA has access to this equipment should a task assignment require the resources.

Optional Leica Equipment

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
			LGO license	Data Collectors	GPS RTK receiver pair	3" total station with long range reflectorless	GPS RTN receiver	GPS Static receiver
Portland, OR****			Floating	16 (CS-15)	5 (GS-14)	11 (6 TS-15, 5 MS-50)	11 (GS-14)	11 (GS-14)
Bellevue, WA			Floating	6 (CS-15)	3 (GS-14)	4 (2 TS-15, 2 MS-50)	6 (GS-14)	6 (GS-14)
Tacoma, WA			Floating	4 (CS-15)	1 (GS-14)	2 (TS-15, MS-50)	3 (GS-14)	3 (GS-14)
Everett, WA			Floating	4 (CS-15)	1 (GS-14)	2 (TS-15, MS-50)	3 (GS-14)	3 (GS-14)
Woodinville, WA			Floating	3 (RX 1250)	1 (ATX 1230)	4 (1203)	3 (ATX 1230)	3 (ATX 1230)
Spokane, WA			Floating	2 (CS-15)	3 (GS-14)	2 (TS-15, MS-50)	6 (GS-14)	6 (GS-14)

Notes

**** = DEA has one Leica P-20 High Definition Scanner, one TITAN Mobile Scanning Unit, and one AIMM Mobile Photogrammetry Unit available from our Portland location.

		TECHNICAL/MANAGEMENT PROPOSAL		
		ITEM #4: LOCATION/GEOGRAPHICAL AREAS		
NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASSIFICATION PER SOW	ALTERNATE LABOR CLASSIFICATION PER SOW	COMPETENT USER OF THE FOLLOWING: (1. µV8i, 2. µV8i In-Roads, 3. TBC, 4. Trimble Access, 5. OPUS Projects)
Jeff Whitson, PLS	Portland, OR	Survey Manager	None	
Kris Westersund, PLS, PE	Portland, OR	Survey Manager	None	
Duffy Haggerty, PLS	Spokane, WA	Project Surveyor	None	1., 2., 3.
Steve Williams, PLS	Portland, OR	Project Surveyor	Survey Manager	1.
Danny Denning, PLS	Portland, OR	Project Surveyor	None	1.
Ken Murto, PLS	Portland, OR	Project Surveyor	None	3., 5.
Greg Crites, PLS	Portland, OR	Project Surveyor	None	1.
Jon Broadwater, PLS	Portland, OR	Project Surveyor	None	1., 3., 4., 5.
Russ Jackson, PLS	Portland, OR	Project Surveyor	None	3., 4., 5.
Pat Smith, PLS	Portland, OR	Project Surveyor	None	
N. Sue Tsoi, PLS	Portland, OR	Project Surveyor	None	1., 2.
Adam LaPlant, PLS	Bellevue, WA	Project Surveyor	None	1., 2.
Gil Laas, PLS, CFedS	Everett, WA	Project Surveyor	None	
Jay Bentley, PLS, CFedS	Ontario, CA	Project Surveyor	None	1., 2.
Erik Brewster, GISP	Portland, OR	GIS Analyst	None	
Edita Boguslawski	Portland, OR	Land Survey Office Technician	None	1., 2.
Doug Malin	Portland, OR	Land Survey Office Technician	None	1., 2.
Liam Madigan	Portland, OR	Land Survey Office Technician	None	1., 2., 3.
Lisa Campbell	Portland, OR	Land Survey Office Technician	None	1., 2.
Tim Schweitzer, LSIT	Portland, OR	Land Survey Office Technician	None	1., 2.
Jim Hagner	Portland, OR	Land Survey Office Technician	None	1., 2.
Kyle McNaught-Davis, LSIT, EIT	Spokane, WA	Land Survey Office Technician	Land Survey Office Technician	1., 2.
Robert Johnson, LSIT	Woodinville, WA	Cartographic Technician	Land Survey Office Technician	1., 2., 3.
Matt Savage	Portland, OR	Cartographic Technician	Land Survey Office Technician	1., 2.
Erich Hiersche	Boise, ID	Survey Party Chief	None	1., 3., 4.
Deane Blair, LSIT	Portland, OR	Survey Party Chief	None	4.
Chad Nelson, LSIT	Portland, OR	Survey Party Chief	None	4.
Keith Lyman, EIT	Portland, OR	Survey Party Chief	Survey Technician	3., 4.
Joe Gigliotti	Portland, OR	Survey Party Chief	None	4.
Ian Marx	Portland, OR	Survey Party Chief	Survey Technician	4.
R. David Williams, LSIT	Bellevue, WA	Survey Party Chief	Survey Technician	4.
Mark Smith	Spokane, WA	Survey Party Chief	Survey Technician	4.
Josh Miller	Spokane, WA	Survey Party Chief	Land Survey Office Technician	1., 2., 3.

LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017			
1	Survey Manager	$ 182.50	N/A
2	Project Surveyor	$ 127.75	N/A
3	Survey Party Chief	$ 94.29	N/A
4	Survey Technician	$ 77.56	N/A
5	Survey Aide	$ 65.40	N/A
6	Land Survey Office Technician	$ 97.34	N/A
7	Drafter/CAD Operator II	$ 79.09	N/A
8	Cartographic Technician	$ 88.21	N/A
9	Clerical/Administration	$ 79.09	N/A
10	GIS Technician	$ 88.21	N/A
11	GIS Analyst	$ 130.79	N/A
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018			
12	Survey Manager	$ 187.98	N/A
13	Project Surveyor	$ 131.58	N/A
14	Survey Party Chief	$ 97.12	N/A
15	Survey Technician	$ 79.90	N/A
16	Survey Aide	$ 67.38	N/A
17	Land Survey Office Technician	$ 100.25	N/A
18	Drafter/CAD Operator II	$ 81.46	N/A
19	Cartographic Technician	$ 90.86	N/A
20	Clerical/Administration	$ 81.46	N/A
21	GIS Technician	$ 90.86	N/A
22	GIS Analyst	$ 134.72	N/A
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019			
23	Survey Manager	$ 193.60	N/A
24	Project Surveyor	$ 135.54	N/A
25	Survey Party Chief	$ 100.05	N/A
26	Survey Technician	$ 82.31	N/A
24	Survey Aide	$ 69.38	N/A
28	Land Survey Office Technician	$ 103.27	N/A
29	Drafter/CAD Operator II	$ 83.89	N/A
30	Cartographic Technician	$ 93.60	N/A
31	Clerical/Administration	$ 83.89	N/A
32	GIS Technician	$ 93.60	N/A
33	GIS Analyst	$ 138.77	N/A
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020			
34	Survey Manager	$ 199.42	N/A
35	Project Surveyor	$ 139.61	N/A
36	Survey Party Chief	$ 103.05	N/A
37	Survey Technician	$ 84.78	N/A
38	Survey Aide	$ 71.45	N/A
39	Land Survey Office Technician	$ 106.37	N/A
40	Drafter/CAD Operator II	$ 86.42	N/A
41	Cartographic Technician	$ 96.39	N/A
42	Clerical/Administration	$ 86.42	N/A
43	GIS Technician	$ 96.39	N/A
44	GIS Analyst	$ 142.93	N/A
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021			
45	Survey Manager	$ 205.40	N/A
46	Project Surveyor	$ 143.81	N/A
47	Survey Party Chief	$ 106.16	N/A
48	Survey Technician	$ 87.33	N/A
49	Survey Aide	$ 73.58	N/A
50	Land Survey Office Technician	$ 109.56	N/A
51	Drafter/CAD Operator II	$ 89.00	N/A
52	Cartographic Technician	$ 99.29	N/A
53	Clerical/Administration	$ 89.00	N/A
54	GIS Technician	$ 99.29	N/A
55	GIS Analyst	$ 147.22	N/A

BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (%)**	**OT Profit (%)**	**OT Contract Billing Rate**
Survey Manager	$ 60.00	$ 105.91	$ 16.59	$ 182.50	N/A	N/A	N/A	N/A
Project Surveyor	$ 42.00	$ 74.14	$ 11.61	$ 127.75	N/A	N/A	N/A	N/A
Survey Party Chief	$ 31.00	$ 54.72	$ 8.57	$ 94.29	N/A	N/A	N/A	N/A
Survey Technician	$ 25.50	$ 45.01	$ 7.05	$ 77.56	N/A	N/A	N/A	N/A
Survey Aide	$ 21.50	$ 37.95	$ 5.95	$ 65.40	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 32.00	$ 56.49	$ 8.85	$ 97.34	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 26.00	$ 45.90	$ 7.19	$ 79.09	N/A	N/A	N/A	N/A
Cartographic Technician	$ 29.00	$ 51.19	$ 8.02	$ 88.21	N/A	N/A	N/A	N/A
Clerical/Administration	$ 26.00	$ 45.90	$ 7.19	$ 79.09	N/A	N/A	N/A	N/A
GIS Technician	$ 29.00	$ 51.19	$ 8.02	$ 88.21	N/A	N/A	N/A	N/A
GIS Analyst	$ 43.00	$ 75.90	$ 11.89	$ 130.79	N/A	N/A	N/A	N/A
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (%)**	**OT Profit (%)**	**OT Contract Billing Rate**
Survey Manager	$ 61.80	$ 109.09	$ 17.09	$ 187.98	N/A	N/A	N/A	N/A
Project Surveyor	$ 43.26	$ 76.36	$ 11.96	$ 131.58	N/A	N/A	N/A	N/A
Survey Party Chief	$ 31.93	$ 56.36	$ 8.83	$ 97.12	N/A	N/A	N/A	N/A
Survey Technician	$ 26.27	$ 46.37	$ 7.26	$ 79.90	N/A	N/A	N/A	N/A
Survey Aide	$ 22.15	$ 39.10	$ 6.13	$ 67.38	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 32.96	$ 58.18	$ 9.11	$ 100.25	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 26.78	$ 47.27	$ 7.41	$ 81.46	N/A	N/A	N/A	N/A
Cartographic Technician	$ 29.87	$ 52.73	$ 8.26	$ 90.86	N/A	N/A	N/A	N/A
Clerical/Administration	$ 26.78	$ 47.27	$ 7.41	$ 81.46	N/A	N/A	N/A	N/A
GIS Technician	$ 29.87	$ 52.73	$ 8.26	$ 90.86	N/A	N/A	N/A	N/A
GIS Analyst	$ 44.29	$ 78.18	$ 12.25	$ 134.72	N/A	N/A	N/A	N/A
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (%)**	**OT Profit (%)**	**OT Contract Billing Rate**
Survey Manager	$ 63.65	$ 112.35	$ 17.60	$ 193.60	N/A	N/A	N/A	N/A
Project Surveyor	$ 44.56	$ 78.66	$ 12.32	$ 135.54	N/A	N/A	N/A	N/A
Survey Party Chief	$ 32.89	$ 58.06	$ 9.10	$ 100.05	N/A	N/A	N/A	N/A
Survey Technician	$ 27.06	$ 47.77	$ 7.48	$ 82.31	N/A	N/A	N/A	N/A
Survey Aide	$ 22.81	$ 40.26	$ 6.31	$ 69.38	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 33.95	$ 59.93	$ 9.39	$ 103.27	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 27.58	$ 48.68	$ 7.63	$ 83.89	N/A	N/A	N/A	N/A
Cartographic Technician	$ 30.77	$ 54.32	$ 8.51	$ 93.60	N/A	N/A	N/A	N/A
Clerical/Administration	$ 27.58	$ 48.68	$ 7.63	$ 83.89	N/A	N/A	N/A	N/A
GIS Technician	$ 30.77	$ 54.32	$ 8.51	$ 93.60	N/A	N/A	N/A	N/A
GIS Analyst	$ 45.62	$ 80.53	$ 12.62	$ 138.77	N/A	N/A	N/A	N/A
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (%)**	**OT Profit (%)**	**OT Contract Billing Rate**
Survey Manager	$ 65.56	$ 115.73	$ 18.13	$ 199.42	N/A	N/A	N/A	N/A
Project Surveyor	$ 45.90	$ 81.02	$ 12.69	$ 139.61	N/A	N/A	N/A	N/A
Survey Party Chief	$ 33.88	$ 59.80	$ 9.37	$ 103.05	N/A	N/A	N/A	N/A
Survey Technician	$ 27.87	$ 49.20	$ 7.71	$ 84.78	N/A	N/A	N/A	N/A
Survey Aide	$ 23.49	$ 41.46	$ 6.50	$ 71.45	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 34.97	$ 61.73	$ 9.67	$ 106.37	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 28.41	$ 50.15	$ 7.86	$ 86.42	N/A	N/A	N/A	N/A
Cartographic Technician	$ 31.69	$ 55.94	$ 8.76	$ 96.39	N/A	N/A	N/A	N/A
Clerical/Administration	$ 28.41	$ 50.15	$ 7.86	$ 86.42	N/A	N/A	N/A	N/A
GIS Technician	$ 31.69	$ 55.94	$ 8.76	$ 96.39	N/A	N/A	N/A	N/A
GIS Analyst	$ 46.99	$ 82.95	$ 12.99	$ 142.93	N/A	N/A	N/A	N/A
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021								
Job Description	**Salary Base Rate**	*** Overhead (176.52%)**	**Profit (10.0%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (%)**	**OT Profit (%)**	**OT Contract Billing Rate**
Survey Manager	$ 67.53	$ 119.20	$ 18.67	$ 205.40	N/A	N/A	N/A	N/A
Project Surveyor	$ 47.28	$ 83.46	$ 13.07	$ 143.81	N/A	N/A	N/A	N/A
Survey Party Chief	$ 34.90	$ 61.61	$ 9.65	$ 106.16	N/A	N/A	N/A	N/A
Survey Technician	$ 28.71	$ 50.68	$ 7.94	$ 87.33	N/A	N/A	N/A	N/A
Survey Aide	$ 24.19	$ 42.70	$ 6.69	$ 73.58	N/A	N/A	N/A	N/A
Land Survey Office Technician	$ 36.02	$ 63.58	$ 9.96	$ 109.56	N/A	N/A	N/A	N/A
Drafter/CAD Operator II	$ 29.26	$ 51.65	$ 8.09	$ 89.00	N/A	N/A	N/A	N/A
Cartographic Technician	$ 32.64	$ 57.62	$ 9.03	$ 99.29	N/A	N/A	N/A	N/A
Clerical/Administration	$ 29.26	$ 51.65	$ 8.09	$ 89.00	N/A	N/A	N/A	N/A
GIS Technician	$ 32.64	$ 57.62	$ 9.03	$ 99.29	N/A	N/A	N/A	N/A
GIS Analyst	$ 48.40	$ 85.44	$ 13.38	$ 147.22	N/A	N/A	N/A	N/A

* Note: Overhead includes 0.34% FCCM (Facilities Capital Cost of Money)

DJ&A, P.C.
ENGINEERS – PLANNERS – SURVEYORS
3203 Russell Street
Missoula, Montana 59801
Phone 406/721-4320
Fax 406/549-6371
www.djanda.com

January 18, 2016

Tracey A. Albright
Contracting Officer
Construction Acquisition Services – NSSV-OPP-2
Bonneville Power Administration
P.O. Box 61409
Vancouver WA, 98662

RE: REQUEST FOR OFFERS NO. 3553, Professional Survey and Mapping Services

Dear Tracey:

We are pleased to provide this electronic copy of our response to the above referenced request for offers. As demonstrated throughout our proposal, we believe that DJ&A will be an excellent fit for the requested services for three primary reasons:

1) **BPA Experience** – One of the most positive developments for DJ&A in the past five years has been our growing relationship with BPA as a client. In 2012 we began work for BPA performing access road design and inventory under a master contract for professional engineering and construction management services. This experience led to other opportunities with BPA including right of way, environmental clearance, bridge load ratings, and survey work on the Rattlesnake-Garrison transmission line near Missoula, MT. This experience has not only familiarized us with the processes and standards unique to BPA, but has also helped us align with BPA's security requirements set forth by FISMA. DJ&A is proud to have taken steps in 2015 to allow us to work with information rated as "medium" under FISMA as validated through a 3rd party audit;
2) **Capacity** – We currently have the ability to provide BPA with seven experienced survey crews to perform work under this contract. Each of our crews is outfitted with state of the art equipment and supported by an office staff that is trained to deliver projects using the programs and software required by BPA;
3) **Client Service** – Our growing relationship with BPA has been built on a foundation of client service and satisfaction. As a small business, we understand and respect the magnitude and importance of this contract. To us, this is not just another contract. Securing this contract would be a significant milestone in our company's history. As president of DJ&A and as contract manager for the subject contract, I pledge to you the full commitment of our team to help BPA successfully achieve its goals and deliver its projects with excellent client service.

We truly value our current relationship with BPA and look forward to further developing it through this contract. After reviewing the enclosed materials, if you need further clarification or information on specific items, please do not hesitate to contact me at (406) 721-4320.

Respectfully,

(b) (6) [redacted]

Christopher Anderson, PE
President, DJ&A, P.C.

\15112
Enclosures
Copy: Melissa Peterson, Contracting Officer's Assistant (BPA)

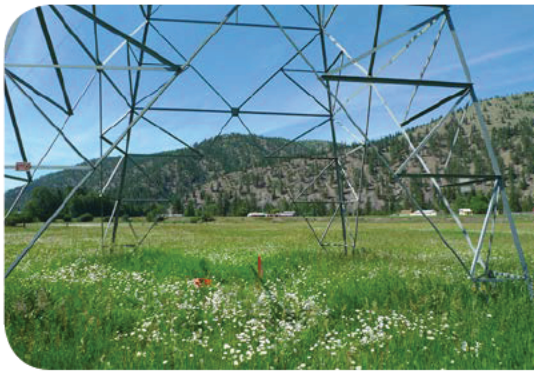
BONNEVILLE
POWER ADMINISTRATION

Request for Offers No. 3553

Professional Survey and Mapping Services







January 2016

DJ&A, P.C. Engineers. Planners. Surveyors.
3203 Russell Street / Missoula, MT 59801
Ph: 406/721-4320 F: 406/549-6371
www.djanda.com

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Amendments

(1) Business/Pricing Proposal

(A) Representations and Certifications

D&A, P.C.
since 1973

ATTACHMENT 2 -- REPRESENTATIONS AND CERTIFICATIONS

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TAXPAYER IDENTIFICATION NUMBER (4-1)
(DEC 98)(BPI 4.1.2.1)

NOTE:
(1) Taxpayer Identification Number (TIN) reporting does not apply to a Federal agency, a foreign government or a foreign business not engaged in business or trade or without an agent capable of receiving payment within the United States.
(2) The TIN for BPA is 93-0334712.

All offerors, other than noted above, are required to submit its Taxpayer Identification Number requested below in order to comply with the Department of Treasury payment processing requirements of 31 U.S.C. 3332 and 7701, and the reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service. If the resulting contract is subject to those requirements, the failure or refusal by the offeror to furnish the information may result in a suspension of payment and a thirty-one (31) percent reduction of payments otherwise due under the contract.

Taxpayer Identification Number 81-0524186.

TYPE OF BUSINESS ORGANIZATION (11-1)
(SEP 02)(BPI 11.10.2.1)

The offeror, by checking the applicable box, represents that-

(a) It operates as /X/ a corporation incorporated under the laws of the State of Montana, / / an individual, / / a partnership, / / a nonprofit organization, or / / a joint venture; or

(b) It is a / / local, / / state, / / federally recognized Indian tribe, or / / other governmental entity, (*describe* _____); or

(c) If the offeror is a foreign entity, it operates as / / an individual, / / a partnership, / / a nonprofit organization, / / a joint venture, or / / a corporation, registered for business in _____ (country) and / / does / / does not have an office or fiscal paying agent in the United States; or

(d) It is / / a type of business organization not otherwise listed above (*describe* _____).

SUPPLIER DIVERSITY AWARD REPRESENTATION (8-1)
(OCT 13)(BPI 8.1.3)

(a) CO Fill-in:

NAICS CODE	Size Standard in Millions of Dollars **OR** Size Standards in Number of Employees
541370	**$15.0 M**

(b) The offeror represents that:

(1) it is /X/, is not /_/ a small business concern.

(2) it is /_/, is not /X/ a disadvantaged small business concern (this includes Native American owned small business, 8-A Certified or Hub-zone and any other disadvantaged small business concerns).

(3) it is /_/, is not /X/ a women-owned small business concern.

(4) it is /_/, is not /X/ a veteran-owned small business concern.

(5) it is /_/, is not /X/ a disabled veteran-owned small business concern.

BUY AMERICAN CERTIFICATE (9-1)
(OCT 93)(BPI 9.1.6)

(a) The Offeror certifies that each end product, except the end products listed below, is a domestic end product (as defined in the clause entitled "Buy American Act - Supplies"), and that components of unknown origin have been considered to have been mined, produced, or manufactured outside the United States.

EXCLUDED END PRODUCTS AND COUNTRY OF ORIGIN
(List as necessary)

_____

_____

_____

(b) An Offeror who proposes to furnish domestic source end products containing components of foreign origin the cost of which exceeds 15 percent of the offered price, shall furnish in the spaces below a complete list of components of foreign origin in sufficient detail to clearly identify each.

FOREIGN COMPONENTS AND POINT OF ORIGIN

_____

_____

_____

The Offeror represents that the total cost of the above components of foreign origin, including applicable duty and transportation costs, constitutes ____ percent of the cost of all components to be incorporated in the end products being furnished. The Offeror agrees to furnish, for the exclusive use of BPA, such additional information as the Contracting Officer may request in order to verify the foregoing in evaluating the offer.

The Offeror agrees that no components of foreign origin, other than those listed above, will be incorporated in the end products being furnished without written approval of the Contracting Officer.

(c) Where an Offeror fails to complete the representation of foreign content provision above, and in the absence of any previous experience with the offeror or information to the contrary, BPA assumes that domestic firms intend to furnish domestic end products and that foreign firms intend to furnish products of foreign origin.

OFFEROR REPRESENTATIONS AND CERTIFICATIONS – PROHIBITED FOREIGN TRANSACTIONS (9-9) (OCT 13)(BPI 9.3.2.1)

(a) The representations in (b)(1) and certifications in (b)(2) and b(3) do not apply if the procurement is covered by a trade agreement as defined in BPI 9.4.2 and the offeror has certified that all the offered products are designated country end products or designated country material.

(b) By submission of its offer, the offeror:

(1) Represents, to the best of its knowledge that the offeror does not export any sensitive technology as defined in Pub. L. 111-195 Section 106 to the government of Iran or any entities or individuals owned or controlled by, or acting on the behalf of the government of Iran.

(2) Certifies that the offeror, or any person owned of controlled by the offeror, does not engage in activities that may result in sanctions under Section 5 of the Iran Sanctions Act (Pub. L. 111-195 et seq.).

(3) Certifies that the offeror, and any person owned or controlled by the offeror, does not knowingly engage in any transaction that exceeds $3,000 with Iran's Revolutionary Guard Corps or any of its officials, agents, or affiliates, the property and interests in property of which are blocked pursuant to the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.)

(4) Certifies that the offeror does not conduct any restricted business operations in Sudan as defined in in the Sudan Accountability and Divestment Act of 2007 (Pub. L. 110-174).

(1) Business/Pricing Proposal

(B) Business Proposal

1. Schedule of Prices

2. Key Personnel Breakdown of Costs

LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017			
1	Survey Manager	$ 143.47	N/A
2	Project Surveyor	$ 111.58	N/A
3	Survey Party Chief	$ 69.97	$ 91.24
4	Survey Technician	$ 58.54	$ 76.34
5	Survey Aid	$ 49.47	$ 64.51
6	Land Survey Office Technician	$ 80.80	$ 105.37
7	Drafter/CAD Operator II	$ 69.59	$ 90.75
8	Cartographic Technician	$ 71.46	$ 93.18
9	Clerical/Administration	$ 56.89	$ 74.19
10	GIS Technician	$ 62.66	$ 81.72
11	GIS Analyst	$ 72.56	$ 94.62
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018			
12	Survey Manager	$ 147.77	N/A
13	Project Surveyor	$ 114.93	N/A
14	Survey Party Chief	$ 72.07	$ 93.98
15	Survey Technician	$ 60.30	$ 78.63
16	Survey Aid	$ 50.96	$ 66.45
17	Land Survey Office Technician	$ 83.23	$ 108.53
18	Drafter/CAD Operator II	$ 71.68	$ 93.47
19	Cartographic Technician	$ 73.60	$ 95.98
20	Clerical/Administration	$ 58.60	$ 76.41
21	GIS Technician	$ 64.54	$ 84.17
22	GIS Analyst	$ 74.73	$ 97.46
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019			
23	Survey Manager	$ 152.20	N/A
24	Project Surveyor	$ 118.38	N/A
25	Survey Party Chief	$ 74.23	$ 96.79
26	Survey Technician	$ 62.11	$ 80.99
24	Survey Aid	$ 52.48	$ 68.44
28	Land Survey Office Technician	$ 85.72	$ 111.79
29	Drafter/CAD Operator II	$ 73.83	$ 96.27
30	Cartographic Technician	$ 75.81	$ 98.86
31	Clerical/Administration	$ 60.36	$ 78.71
32	GIS Technician	$ 66.48	$ 86.69
33	GIS Analyst	$ 76.98	$ 100.38
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020			
34	Survey Manager	$ 156.77	N/A
35	Project Surveyor	$ 121.93	N/A
36	Survey Party Chief	$ 76.45	$ 99.70
37	Survey Technician	$ 63.97	$ 83.42
38	Survey Aid	$ 54.06	$ 70.49
39	Land Survey Office Technician	$ 88.30	$ 115.14
40	Drafter/CAD Operator II	$ 76.04	$ 99.16
41	Cartographic Technician	$ 78.08	$ 101.82
42	Clerical/Administration	$ 62.17	$ 81.07
43	GIS Technician	$ 68.47	$ 89.29
44	GIS Analyst	$ 79.29	$ 103.39

OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021					
45	Survey Manager	$	161.47	N/A	
46	Project Surveyor	$	125.59	N/A	
47	Survey Party Chief	$	78.75	$	102.69
48	Survey Technician	$	65.89	$	85.92
49	Survey Aid	$	55.68	$	72.61
50	Land Survey Office Technician	$	90.94	$	118.59
51	Drafter/CAD Operator II	$	78.32	$	102.14
52	Cartographic Technician	$	80.43	$	104.88
53	Clerical/Administration	$	64.03	$	83.50
54	GIS Technician	$	70.53	$	91.97
55	GIS Analyst	$	81.66	$	106.49

BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 43.50	$ 84.59	$ 15.37	$ 143.47	N/A	N/A	N/A	N/A
Project Surveyor	$ 33.83	$ 65.80	$ 11.96	$ 111.58	N/A	N/A	N/A	N/A
Survey Party Chief	$ 21.21	$ 41.26	$ 7.50	$ 69.97	$ 31.82	$ 49.64	$ 9.78	$ 91.24
Survey Technician	$ 17.75	$ 34.52	$ 6.27	$ 58.54	$ 26.63	$ 41.54	$ 8.18	$ 76.34
Survey Aid	$ 15.00	$ 29.17	$ 5.30	$ 49.47	$ 22.50	$ 35.10	$ 6.91	$ 64.51
Land Survey Office Technician	$ 24.50	$ 47.65	$ 8.66	$ 80.80	$ 36.75	$ 57.33	$ 11.29	$ 105.37
Drafter/CAD Operator II	$ 21.10	$ 41.03	$ 7.46	$ 69.59	$ 31.65	$ 49.37	$ 9.72	$ 90.75
Cartographic Technician	$ 21.67	$ 42.14	$ 7.66	$ 71.46	$ 32.50	$ 50.70	$ 9.98	$ 93.18
Clerical/Administration	$ 17.25	$ 33.55	$ 6.10	$ 56.89	$ 25.88	$ 40.37	$ 7.95	$ 74.19
GIS Technician	$ 19.00	$ 36.95	$ 6.71	$ 62.66	$ 28.50	$ 44.46	$ 8.76	$ 81.72
GIS Analyst	$ 22.00	$ 42.78	$ 7.77	$ 72.56	$ 33.00	$ 51.48	$ 10.14	$ 94.62
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 44.81	$ 87.13	$ 15.83	$ 147.77	N/A	N/A	N/A	N/A
Project Surveyor	$ 34.85	$ 67.77	$ 12.31	$ 114.93	N/A	N/A	N/A	N/A
Survey Party Chief	$ 21.85	$ 42.49	$ 7.72	$ 72.07	$ 32.78	$ 51.13	$ 10.07	$ 93.98
Survey Technician	$ 18.28	$ 35.55	$ 6.46	$ 60.30	$ 27.42	$ 42.78	$ 8.42	$ 78.63
Survey Aid	$ 15.45	$ 30.05	$ 5.46	$ 50.96	$ 23.18	$ 36.15	$ 7.12	$ 66.45
Land Survey Office Technician	$ 25.24	$ 49.07	$ 8.92	$ 83.23	$ 37.85	$ 59.05	$ 11.63	$ 108.53
Drafter/CAD Operator II	$ 21.73	$ 42.26	$ 7.68	$ 71.68	$ 32.60	$ 50.86	$ 10.01	$ 93.47
Cartographic Technician	$ 22.32	$ 43.40	$ 7.89	$ 73.60	$ 33.48	$ 52.22	$ 10.28	$ 95.98
Clerical/Administration	$ 17.77	$ 34.55	$ 6.28	$ 58.60	$ 26.65	$ 41.58	$ 8.19	$ 76.41
GIS Technician	$ 19.57	$ 38.06	$ 6.92	$ 64.54	$ 29.36	$ 45.79	$ 9.02	$ 84.17
GIS Analyst	$ 22.66	$ 44.07	$ 8.01	$ 74.73	$ 33.99	$ 53.02	$ 10.44	$ 97.46
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 46.15	$ 89.75	$ 16.31	$ 152.20	N/A	N/A	N/A	N/A
Project Surveyor	$ 35.89	$ 69.80	$ 12.68	$ 118.38	N/A	N/A	N/A	N/A
Survey Party Chief	$ 22.51	$ 43.77	$ 7.95	$ 74.23	$ 33.76	$ 52.66	$ 10.37	$ 96.79
Survey Technician	$ 18.83	$ 36.62	$ 6.65	$ 62.11	$ 28.25	$ 44.06	$ 8.68	$ 80.99
Survey Aid	$ 15.91	$ 30.95	$ 5.62	$ 52.48	$ 23.87	$ 37.24	$ 7.33	$ 68.44
Land Survey Office Technician	$ 25.99	$ 50.55	$ 9.18	$ 85.72	$ 38.99	$ 60.82	$ 11.98	$ 111.79
Drafter/CAD Operator II	$ 22.38	$ 43.53	$ 7.91	$ 73.83	$ 33.58	$ 52.38	$ 10.32	$ 96.27
Cartographic Technician	$ 22.99	$ 44.70	$ 8.12	$ 75.81	$ 34.48	$ 53.79	$ 10.59	$ 98.86
Clerical/Administration	$ 18.30	$ 35.59	$ 6.47	$ 60.36	$ 27.45	$ 42.82	$ 8.43	$ 78.71
GIS Technician	$ 20.16	$ 39.20	$ 7.12	$ 66.48	$ 30.24	$ 47.17	$ 9.29	$ 86.69
GIS Analyst	$ 23.34	$ 45.39	$ 8.25	$ 76.98	$ 35.01	$ 54.62	$ 10.75	$ 100.38
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 47.53	$ 92.44	$ 16.80	$ 156.77	N/A	N/A	N/A	N/A
Project Surveyor	$ 36.97	$ 71.90	$ 13.06	$ 121.93	N/A	N/A	N/A	N/A
Survey Party Chief	$ 23.18	$ 45.08	$ 8.19	$ 76.45	$ 34.77	$ 54.24	$ 10.68	$ 99.70
Survey Technician	$ 19.40	$ 37.72	$ 6.85	$ 63.97	$ 29.09	$ 45.39	$ 8.94	$ 83.42
Survey Aid	$ 16.39	$ 31.88	$ 5.79	$ 54.06	$ 24.59	$ 38.35	$ 7.55	$ 70.49
Land Survey Office Technician	$ 26.77	$ 52.06	$ 9.46	$ 88.30	$ 40.16	$ 62.65	$ 12.34	$ 115.14
Drafter/CAD Operator II	$ 23.06	$ 44.84	$ 8.15	$ 76.04	$ 34.58	$ 53.95	$ 10.62	$ 99.16
Cartographic Technician	$ 23.68	$ 46.04	$ 8.37	$ 78.08	$ 35.51	$ 55.40	$ 10.91	$ 101.82
Clerical/Administration	$ 18.85	$ 36.66	$ 6.66	$ 62.17	$ 28.27	$ 44.11	$ 8.69	$ 81.07
GIS Technician	$ 20.76	$ 40.38	$ 7.34	$ 68.47	$ 31.14	$ 48.58	$ 9.57	$ 89.29
GIS Analyst	$ 24.04	$ 46.75	$ 8.49	$ 79.29	$ 36.06	$ 56.25	$ 11.08	$ 103.39

OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021									
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 48.96	$ 95.21	$ 17.30	$ 161.47	N/A	N/A	N/A	N/A
Project Surveyor	$ 38.08	$ 74.05	$ 13.46	$ 125.59	N/A	N/A	N/A	N/A
Survey Party Chief	$ 23.88	$ 46.43	$ 8.44	$ 78.75	$ 35.82	$ 55.87	$ 11.00	$ 102.69
Survey Technician	$ 19.98	$ 38.85	$ 7.06	$ 65.89	$ 29.97	$ 46.75	$ 9.21	$ 85.92
Survey Aid	$ 16.88	$ 32.83	$ 5.97	$ 55.68	$ 25.32	$ 39.51	$ 7.78	$ 72.61
Land Survey Office Technician	$ 27.57	$ 53.63	$ 9.74	$ 90.94	$ 41.36	$ 64.53	$ 12.71	$ 118.59
Drafter/CAD Operator II	$ 23.75	$ 46.18	$ 8.39	$ 78.32	$ 35.62	$ 55.57	$ 10.94	$ 102.14
Cartographic Technician	$ 24.39	$ 47.42	$ 8.62	$ 80.43	$ 36.58	$ 57.06	$ 11.24	$ 104.88
Clerical/Administration	$ 19.42	$ 37.76	$ 6.86	$ 64.03	$ 29.12	$ 45.43	$ 8.95	$ 83.50
GIS Technician	$ 21.38	$ 41.59	$ 7.56	$ 70.53	$ 32.08	$ 50.04	$ 9.85	$ 91.97
GIS Analyst	$ 24.76	$ 48.15	$ 8.75	$ 81.66	$ 37.14	$ 57.94	$ 11.41	$ 106.49

(2) Technical/Management Proposal

1. Equipment (Item #5)
2. Locations (Item #6)

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TECHNICAL/MANAGEMENT PROPOSAL
ITEM #5: EQUIPMENT

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	µ V8i license	µ V8i In-Roads license	TBC current licenses	Data Collectors with Trimble Access	GPS RTK receiver pair	3" Total Station with long range reflectorless	Trimble GPS RTN receivers	Trimble GPS Static receivers
Missoula, MT	*4*	*3*	*6*	*8*	*8*	*8*	*14*	*18*
Brands/Model Number	N/A	N/A	N/A	Trimble TSC3 (4) Trimble TSC2 (4)	Trimble R8 (4) Trimble R10 (2) Trimble 5800 (2)	Trimble S5 Trimble 5603 Leica TCRA 1201 Leica TS09 Leica TS06 (2) Leica TCR703 Leica TCR803	R10 - (4), R8 - (8), 5800 - (2)	R10 - (4), R8 - (8), 5800 - (2), 5700 - (1), 4700 - (3)

CONTRACTOR-FURNISHED PROPERTY

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	Four-Wheel Drive, Cell Phone Equipped Vehicles	Tire Chains	Total Stations (including reflectorless technology)	Field Data Collectors w/Trimble Access Software *(licenses current)*	Current Hardware/ Software Maintenance Agreements	Leica Levels *(4-digital, 7-auto)*	Multiple Dual Frequency Geode ic-Grade GPS Systems w/Static & Rapid static	Multiple Dual Frequency RTN/VRS GPS Receivers
Missoula, MT	*14*	*14*	*11*	*22*	*15*	*11*	*18*	*14*

CONTRACTOR-FURNISHED PROPERTY CONTINUED

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	GPS RTN/VRS subscriptions OR/WA (active OR account - WA account to be activated when needed)	Multiple Dual Frequency RTK Systems	Multiple Trimble Resource-Grade GPS System wi h post-processed sub meter accuracies	Scientific Calculators	Magne ic Locators	Two-Way Radios	Chainsaws	Digital Cameras
Missoula, MT	*1*	14	*5*	*23*	*8*	*16*	*6*	*23*

CONTRACTOR-FURNISHED PROPERTY

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)		
	DOT/OSHA-Approved Safety Equipment	Hand Tools Standard to Field Surveying	Computers & Related Software to Support Field Surveying Personnel and Equipment
Missoula, MT	*14*	*32*	23

CONTRACTOR-FURNISHED SOFTWARE

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	Bentley MicroStation V8i CAD Platform	Bentley Software 3 - Power InRoads, 1 - Descartes V8i	Current Trimble Business Center Software Current licenses v3.1 = 3, v3.4 = 3	ESRI ArcMap Software Current licenses (version 10.2)	Trimble Pathfinder Office (will update license as soon as needed)	Programs Supporting ESRI-Compatible File Formats (e.g. Civil 3D, Microstation, TBC, Global Mapper, ArcMap and more)	PLS-CADD Software Licenses to support LiDAR Data Analysis	OPUS Projects Certified Users
Missoula, MT	*4*	*4*	*6*	*3*	*1*	*12+*	*0*	*2*
Denver, CO	N/A	N/A	N/A	N/A	N/A	N/A	*2*	N/A
Portland, OR	N/A	N/A	N/A	N/A	N/A	N/A	*21*	N/A

TECHNICAL/MANAGEMENT PROPOSAL
ITEM #6: LOCATION/GEOGRAPHICAL AREAS

NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASS. PER SOW	ALT. LABOR PER SOW CLASS	COMPETENT USER OF OF THE FOLLOWING: (1.V8i, 2.V8i In-Roads, 3.TBC, 4.Trimble Access, 5. OPUS Projects)
Chris Anderson, PE, LEED AP	Missoula, MT	Contract Manager (non-billable)	N/A	
Glenn Howard, PLS	Missoula, MT	Survey Manager	Project Surveyor	
Kurt Luebke, PLS, CFedS	Missoula, MT	Survey Manager	Project Surveyor	3, 4, 5
George Marshall, PLS	Missoula, MT	Survey Manager	Project Surveyor	1, 2, 3, 4
Bob Rinfret, PLS	Missoula, MT	Project Surveyor	Land Survey Office Technician	1, 2, 3, 4, 5
Jeff Cyr, PLS	Missoula, MT	Project Surveyor	Survey Party Chief	1, 2, 3, 4
John Harwood	Missoula, MT	Land Survey Office Technician	Drafter/CAD Operator II	1, 2
Mark Lehman	Missoula, MT	Drafter/CAD Operator II	Cartographic Technician	1, 2
Shane Harwood	Missoula, MT	Drafter/CAD Operator II	Survey Technician	4
Dana Thorn	Missoula, MT	Drafter/CAD Operator II	Survey Technician	3,4
Amanda Armstrong	Missoula, MT	Drafter/CAD Operator II	Survey Technician	
Ben Sundy	Missoula, MT	GIS Technician	N/A	
Andy Scalise	Missoula, MT	Cartographic Technician	GIS Technician	
John Shirey, LSI	Missoula, MT	Survey Party Chief	Survey Technician	4
Joe Cone	Missoula, MT	Survey Party Chief	Survey Technician	4
Jason Holler	Missoula, MT	Survey Party Chief	Survey Technician	3,4
Steve Cummings	Missoula, MT	Survey Party Chief	Survey Technician	4
Mike Schmid-Sommer	Missoula, MT	Survey Party Chief	Survey Technician	4
Jake Maier	Missoula, MT	Survey Party Chief	Survey Technician	4
Henry Moua	Missoula, MT	Survey Party Chief	Survey Technician	4
Mark Erickson	Missoula, MT	Survey Technician	Survey Aid	4
Dee Weaver	Missoula, MT	Survey Technician	Survey Aid	
Clay Armstrong	Missoula, MT	Survey Technician	Survey Aid	
Blake Norman	Missoula, MT	Survey Technician	Survey Aid	
Jenny Gray	Missoula, MT	Clerical/Administration		
Kelly Youbles	Missoula, MT	Clerical/Administration		
Brian Holzworth, GISP	Denver, CO	Survey Manager	GIS Analyst	
Joshua Nimetz, CMS	Denver, CO	Land Survey Office Technician	N/A	1
Bruce A. Adey, GISP	Denver, CO	GIS Analyst	Land Survey Office Technician	1,2
Ian Berdie, PMP	Portland, OR	Survey Manager	N/A	
Ryan Lynch	Portland, OR	Land Survey Office Technician	N/A	
Jamie Ludwig	Portland, OR	Land Survey Office Technician	N/A	

(2) Technical/Management Proposal

1. Professional Qualifications
   - Organizational Chart
   - Resumes

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1. Professional Qualifications

Provide a list of key personnel anticipated to be involved with this contract. The person who is in responsible charge for each project is required to be licensed as a Professional Land Surveyor in the state(s) where the project is located. Submit current resume(s) for key personnel and address the size, scope and responsibilities of recent projects they have overseen along with their years and level of experience in the following categories:

A. Route surveying (with an emphasis on high-voltage transmission lines);

B. Topographic surveying on a large site for new facilities (such as a substation);

C. GPS experience for a variety of applications (with an emphasis on high order control for new transmission lines or large area control for Photogrammetric or LiDAR projects). This should include RTN, RTK, Static, Rapid static, OPUS, Trimble Business Center and Trimble Access.

D. Transmission line support surveys such as relocations, upgrades and foreign crossings requiring extensive horizontal and elevation work involving existing structures, conductors and attachment points.

E. Resource grade GPS data collection (such as large area access road location/condition surveys that would be collected to support new or existing transmission lines)

F. Ability to perform cadastral type surveys spanning multiple townships and ranges (as would be needed for long linear transmission line corridors).

G. Legal description and exhibit preparation for real property acquisition and state and federal permitting; preferably transmission line, access roads or substation related. (ie,"strip" type descriptions)

H. Preparation of survey maps (plan, profile, record/certificate of survey, topographic, exhibits, etc.) with Microstation to support transmission lines, route surveys, facility design, acquisition and field surveys.

I. Surveying and Mapping across: USFS, USACE, BLM, DNR, Tribal or other cultural or environmentally sensitive areas

J. GIS attribute data collection and deliverables including ArcMap use.

K. Working with Lidar point cloud data.

Overview

For over 40 years, we at DJ&A, P.C. (DJ&A) have been providing professional surveying and mapping services in BPA's service territory. Much of this work has been for clients, such as Northwestern Energy and Western Area Power Authority (WAPA), with needs similar to those of BPA. We are now able to

combine this long history of relevant experience with significant BPA-specific experience over the past three years. Since 2013, our GIS and engineering departments have successfully completed several access road inventories, designs, and construction inspections for Todd Nicholson and the Civil Design group under a long-term contract. In 2015, we had the opportunity to complete a 14-mile Certificate of Survey for the Rattlesnake-Garrison transmission line. In 2015, we also completed a right of way acquisition project under the direction of Lila Black. Most recently, we have begun providing environmental services under the direction of Laura Roberts and Phil Smith. Because of all of these BPA projects, we have become very familiar with BPA protocols and project delivery requirements and are most eager to continue to serve BPA under the subject surveying and mapping contract.

One common thread for all of our BPA work over the past three years has been Chris Anderson, our president, who has served as contract manager and will serve the same role on the subject contract. Chris will ensure that BPA continues to receive excellent service. Chris backs up this commitment with the actions he takes. For example, approximately two years ago, Chris did not hesitate in making the considerable investment required to secure FISMA certification when he learned that BPA would eventually make such certification mandatory for its consultants. As another example, Chris worked with our survey manager, Glenn Howard, to recruit and hire George Marshall, a PLS who retired from BPA after a 28-year career. George will serve as one of our survey managers and has a depth of relevant experience that no one outside of BPA can match. As a third example, Chris makes certain that our personnel have the latest trainings needed to serve our clients. He recently authorized trainings for our key office personnel to enhance their skills in the latest versions of MicroStation, InRoads and OpenRoads. Finally, Chris has been heavily involved in the development of this proposal to ensure that it accurately reflects two key points: 1) the DJ&A Team is exceptionally well qualified to meet *every* need identified in the subject Request for Offers (RFO); and 2) the DJ&A Team has ample capacity to complete multiple large projects simultaneously while still offering the efficiencies and customer service of a small business.

Professional Land Surveyors

Our team is led by 5 professional land surveyors who have licenses in 5 of the states covered under this contract including: Idaho (2), Montana (5), Oregon (2), Utah (1), Washington (2), and Wyoming (1).



Key Personnel

As shown in Table 1, our team's 19 key personnel have an average of over 18 years of experience. In addition, our team has two or more people that are experts in every surveying category included in the subject Request for Offers (RFO).

As requested, we have included resumes for each of the key personnel. These resumes document the size, scope, and responsibilities of relevant project experience for each of these people and provide the years of experience of each individual along with their level of experience in the 11 categories included in the solicitation.

We want there to be no doubt that our team has multiple highly qualified individuals in *every* survey category covered by this contract.

Key Personnel	Years of Experience	Primary Labor Category	A. ROUTE SURVEYING	B. TOPOGRAPHIC SURVEYING	C. GPS EXPERIENCE	D. TRANSMISSION LINE SUPPORT SURVEYS	E. RESOURCE GRADE GPS DATA COLLECTION	F. CADASTRAL TYPE SURVEYS	G. LEGAL DESCRIPTION AND EXHIBIT	H. PREPARATION OF SURVEY MAPS	I. SURVEYING & MAPPING ACROSS SENSITIVE AREAS	J. GIS	K. LIDAR POINT CLOUD DATA
Chris Anderson, PE	12	Contract Manager (non-billable)											
Glenn Howard, PLS	42	Survey Manager	G	G	S	G	B	G	G	G	G		S
Kurt Luebke, PLS	23	Survey Manager	G	G	G	G	B	G	G	G	G	B	S
George Marshall, PLS	30	Survey Manager	G	G	G	G		G	G	B	G		B
Bob Rinfret, PLS	8	Project Surveyor	G	G	G	G	B	G	G	G	G	S	G
Jeff Cyr, PLS	21	Project Surveyor	G	G	G	S	B	G	G	G	G	B	B
John Harwood	25	Land Survey Office Technicians	G	G	B	S	B	S	S	G	S	B	B
Mark Lehman	39	Land Survey Office Technicians	G	G		S	B	B	S	G	G	B	S
Dana Thorn	5	Drafter/CAD Operator II	S	G	S	B	B	S	B	G	G	B	S
Ben Sundy	5	GIS Technician					G					G	
Andy Scalise	5	GIS Technician		G	G	G		B	B	S	G	G	B
John Shirey, LSI	23	Survey Party Chief	G	G	G	S	B	G	B		G	B	
Joe Cone	19	Survey Party Chief	G	G	G	S	B	G	B		G	B	
Jason Holler	10	Survey Party Chief	G	G	G	G	G	G	S	S	G	S	S
Steve Cummings	22	Survey Party Chief	G	G	G	S	B	G	B		G	B	
Mike Schmid-Sommer	10	Survey Party Chief	G	G	G	S	S	G	B	B	G	B	B
Jake Maier	10	Survey Party Chief	G	G	G	B	B	G		B	S	B	
Brian Holzworth, GISP	27	GIS Analyst	S	S	B	S	B		B	G	G	G	G
Ian Berdie, PMP	14	GIS Analyst	S	S	B	S	B		B	G	G	G	G

GOLD **Expert** - indicates a high level of understanding and experience and the ability to manage others

SILVER **Advanced** - indicates significant experience and an ability to execute with minimal supervision

BRONZE **Bronze** - Intermediate, indicates adequate experience and an ability to effectively support

Table 1. Level of experience for key personnel for all relevant surveying categories

ORGANIZATIONAL CHART

BONNEVILLE POWER ADMINISTRATION

CONTRACT MANAGER

- Chris Anderson, PE, LEED AP

SURVEY MANAGER

- Glenn Howard, PLS
- Kurt Luebke, PLS, CFedS
- George Marshall, PLS

PROJECT SURVEYOR

- Kurt Luebke, PLS, CFedS
- Bob Rinfret, PLS
- Jeff Cyr, PLS

OFFICE PERSONNEL

Land Survey Office Technicians:
- John Harwood
- Mark Lehman

Drafter/CAD Operator II:
- John Harwood
- Shane Harwood
- Mark Lehman
- Dana Thorn
- Amanda Armstrong

Cartographic Technicians:
- Mark Lehman
- John Harwood
- Andy Scalise

Clerical/Administration:
- Jenny Gray
- Kelly Youbles

GIS Analyst:
- Ben Sundy
- Brian Holzworth, GISP (Merrick & Company)

GIS Technician:
- Ben Sundy
- Andy Scalise

FIELD CREWS

Survey Party Chiefs:
- John Shirey, LSI
- Joe Cone
- Jason Holler
- Steve Cummings
- Mike Schmid-Sommer
- Jake Maier
- Henry Moua

Survey Technicians:
- Mark Erickson
- Amanda Armstrong
- Dee Weaver
- Clay Armstrong
- Hire on Seasonal Basis

Survey Aids:
- Hire on seasonal basis

SUBCONTRACTORS

Aerial Imagery / Aerial LiDAR Mapping Survey Managers
- Brian Holzworth, GISP (Merrick & Company)
- Ian Berdie, PMP (Quantum Spatial)

GIS Analyst
- Brian Holzworth, GISP (Merrick & Company)
- Bruce A. Adey, GISP (Merrick & Company)

- Key Personnel: Resumes included

DJ&A, P.C. since 1973



CHRISTOPHER ANDERSON, PE, LEED AP – Contract Manager

Chris is a registered Professional Engineer in 13 states including Idaho, Montana, Nevada, Utah and Wyoming. Chris started his career at DJ&A as a summer survey aid in 1997 and assumed his current role as president in 2013. Chris' primary role today is to assure that our clients are extremely satisfied. **He has served as contract and project manager for the BPA Access Roads Engineering contract since 2013.** Because of his leadership and success, our services with BPA have since expanded to include right of way work, surveying, and, most recently, environmental services. Chris also successfully manages multiple engineering and surveying contracts with various federal agencies including US Forest Service, National Park Service, and Western Federal Lands Highway Division. Chris looks forward to continuing to meet the needs of BPA.

Years of Experience: 12

EDUCATION

B.S. Civil Engineering
Brigham Young University
(2004)

REGISTRATIONS

Professional Engineer

(AK) (AZ) (HI) (ID) (KS) (MT) (OK) (NE) (NM) (NV) (UT) (TX) (WY)

AFFILIATIONS

US Green Building Council (USGBC), Montana Chapter - Board Member (2012-present)

Institute for Sustainable Infrastructure (ISI)

American Society of Civil Engineers (ASCE)

EXPERIENCE

2004 - Present: DJ&A, P.C.

(Missoula, MT)

1997 (Summer): DJ&A, P.C. - surveying (Missoula, MT)

Bonneville Power Administration – BPA Contracts DJ&A has held an Access Roads Engineering Contract with BPA since 2013. Chris has managed all aspects of this contract while providing project management for each of the 33 task orders that have been issued under this contract. Chris capably delegates tasks to others within the company to optimize cost-effectiveness for BPA while assuring that all project deliverables are of high quality and meet or exceed BPA's expectations. As an example of his dedication to serving BPA, Chris led DJ&A's effort to secure FISMA certification so that DJ&A security measures would meet BPA's standards. Chris has managed or had oversight for 33 separated BPA task order. Contract Amount: N/A **Responsibilities:** Contract and Project Manager

National Park Service – Survey and Mapping Contract for Intermountain Region Having served as contract manager for our full-service engineering contracts with the National Park Service, Chris led DJ&A's effort to pursue this surveying and mapping contract to provide services to the eight-state region ranging from Texas to Montana. DJ&A won this contract in the spring of 2015 in part based on DJ&A's abundance of relevant experience and on Chris' proven ability to take care of this client. Chris has worked closely with our survey managers and project surveyors to deliver 4 task orders to date under this contract. Contract Amount: N/A **Responsibilities:** Contract Manager

Bonneville Power Administration – Rattlesnake - Garrison (Western MT) This project included the field design and layout of roads accessing 62 miles of transmission line between the Rattlesnake and Garrison substations. Project tasks included use of BPA EGIS system, route staking, GIS data production, specification preparation, and cost estimation. Project challenges included working closely with land owners to build trust and discover reasonable solutions to gain proper access to the transmission line. Contract Amount: $190K. **Responsibilities:** As Project Manager, Chris supervised all aspects of data collection, data processing, data delivery and geospatial integration.

Bonneville Power Administration – Chehalis Access Road Inventories & Conditions Assessments (Idaho) DJ&A was responsible for performing condition assessments, inventories, database management, and design for improvements to 6 miles of low-volume, rural roads. These roads provide access to BPA's transmission lines located near Chehalis, Washington. Duties included preparing road plans and specifications for construction after having completed an inventory of the entire access road and performing conditions assessments for roadway, culverts, drainage ditches, and adjacent slopes. All data was recorded in an ArcGIS database consistent with BPA protocols. When construction begins, DJ&A will be responsible for providing construction support and inspection services. Contract Amount: $133K. **Responsibilities:** As Project Manager, Chris supervised all aspects of data collection, data processing, data delivery and geospatial integration.



GLENN HOWARD, PLS - Survey Manager

Glenn is a registered Professional Land Surveyor in three states (Montana, North Dakota and South Dakota) with more than 42 years of experience. As the Survey Department Manager, Glenn provides project management, coordination, and QA/QC for all of DJ&A's survey/mapping projects. Glenn works closely with our clients to meet project schedule, while adhering to project budgets. Glenn has the experience and successful history of managing multiple survey projects simultaneously throughout the western US, from Alaska to New Mexico, with Federal and State Agencies. **Glenn served as survey manager for DJ&A's most recent project with BPA, the route surveying for the high-voltage transmission line from Rattlesnake to Clinton.**

A B C D E F G H I K

Years of Experience: 42

EDUCATION

Miltonvale Wesleyan College
Miltonvale, KS

University of Montana - College of Technology

RELEVANT BPA TRAINING

GPS - Project Planning Course, Sunnyvale, CA

Trimble GPS Surveying Real Time

REGISTRATIONS

Professional Land Surveyor (MT) (ND) (SD)

AFFILIATIONS

Past President for Montana Association of Registered Land Surveyors (MARLS)

National Society of Professional Land Surveyors (NSPS)

EXPERIENCE

2001 - Present: DJ&A, P.C. Vice President, Surveying (Missoula, MT)

1973 - 2001: DJ&A, P.C. - Formerly Druyvestein Johnson and Anderson (Missoula, MT)

Bonneville Power Administration – Rattlesnake - Clinton (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services for 14 miles of 230kV transmission line location and right of way surveys. DJ&A was tasked with conducting detailed records research, project horizontal and vertical control surveys, cadastral corner and property corner search and field surveys, existing transmission line structure surveys, right of way encroachment surveys, transmission line right of way centerline calculations, monumentation of tower structure centers and point on tangents (POT's), post and marking of transmission line right of ways with BPA carsonite signage posts, the preparation and filing of a certificate of survey documenting the transmission line right of way with the county clerk and recorder office, and the preparation and submittal of hard copy and electronic project documents to the client. Contract Amount: $214K. **Responsibilities:** As survey manager, Glenn was responsible for contract documents, project cost estimates, overall project coordination with staff and client, project QA/QC review and project deliverables.

NorthWestern Energy (NWE) – Mill Creek Generation Station (Anaconda, MT) DJ&A was responsible for the surveying and engineering services in connection with the development of a complex gas-fired electrical generation plant (on an existing EPA superfund site) to support existing wind generation line-load inconsistencies. The project included: project coordination; detailed land records and documentation research; establishing project control; filing legal property boundary surveys; topographic and planimetric mapping of utility corridors and gas compressor and electrical generation plant site surveys, existing electrical substation and overhead transmission line corridor surveys (using high definition terrestrial laser scanner); state highway and railroad right of way surveys; construction staking surveys for access roadways and site development; office calculations and computations including design stakeout points, earthwork volumetric quantity determination, easements and property boundaries, ground surfaces and multiple exhibits. Contract Amount: $260K. **Responsibilities:** As survey manager, Glenn was responsible for contract documents, project cost estimates, overall project coordination with staff and client, project QA/QC review and project deliverables.

NorthWestern Energy (NWE) – Rattlesnake to Deer Creek 161kV Transmission Line (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services covering 7 miles of line and structures. DJ&A was tasked with conducting review of the existing transmission line record plans and profile drawings, establishment of horizontal and vertical project control using GPS,

conducting transmission line ground profile surveys, providing structure, insulator attachment point and conductor line surveys using terrestrial laser scanner technology, conducting ground cross-sections and develop topographic mapping drawings, preparing transmission line plan and profile drawings and structure and conductor line ground clearance exhibits. Contract Amount: $52K. **Responsibilities:** As survey manager, Glenn was responsible for contract documents, project cost estimates, overall project coordination with staff and client, project QA/QC review and project deliverables.

PPL Generation - Rainbow Dam Redevelopment Project (Great Falls, MT) DJ&A provided extensive surveying and mapping services in support of the construction of a multi-million dollar hydro generation plant over a four-year period. Services included: detailed records and document research; property boundary and cadastral surveys through eighteen (18) sections; horizontal and vertical survey control support for ten miles of aerial imagery and mapping; establishing high order project control monuments, conducting detailed topographical and planimetric site mapping (using terrestrial laser scanner, GPS, and Total Station) of approximately 100-acre site surrounding the power generation site; survey and mapped over ten miles of transmission lines and utility right of way corridors; preparing utility easement exhibits; surveying identified wetland delineation sites; and providing project construction staking services including structure staking of 10 miles of new transmission lines. DJ&A was also tasked with conducting as-constructed surveys and maps and providing the client with drawings and volumetric and quantity calculation reports. Contract Amount: $275K. **Responsibilities:** As survey manager, Glenn was responsible for contract documents, project cost estimates, overall project coordination with staff and client, project QA/QC review and project deliverables.

Western Area Power Administration (WAPA) – Transmission Lines (Southeast, MT) DJ&A was responsible for project coordination with the aerial LiDAR and ortho imagery client for remote sensing acquisition services of approximately 750 miles of transmission lines. DJ&A was tasked with providing the GPS surveys for project horizontal and vertical control; placement and survey of aerial photo targets and photo identification points; providing aerial acquisition GPS base station support services; and conducting aerial LiDAR verification surveys of ground surfaces and overhead transmission conductor line heights using terrestrial laser scanner and GPS technologies. Work was completed as subconsultant to Merrick. Subcontract Amount: $120K. **Responsibilities:** As survey manager, Glenn was responsible for contract documents, project cost estimates, overall project coordination with staff and client, project QA/QC review and project deliverables.

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KURT LUEBKE, PLS, CFedS – Survey Manager / Project Surveyor

Kurt is a registered Professional Land Surveyor in 11 states including six states in BPA's territory (ID, MT, OR, UT, WA, and WY) and a Certified Federal Surveyor with more than 23 years of professional land surveying and right of way research experience. Kurt is a technical expert in all aspects of relevant research and equipment including survey grade GPS, RTK, static and rapid static applications and LASER SCANNER operations. Kurt's main areas of responsibility include managing cadastral projects for the US Forest Service, US Bureau of Reclamation, Federal Highway Administration and many private clients. Kurt is continually working to improve his knowledge. For example, within the past year, he completed a degree in surveying and geomatics, **the OPUS Projects Manager's Training, and a full-suite of MicroStation training, including Open Roads.** Kurt truly loves surveying – in fact, he often spends his vacation time researching and finding historical survey and significant regional monuments. His most recent trip was to the Black Hills in September 2015.

A B C D E F G H I J K

Years of Experience: 23

EDUCATION

B.S. - Forest Resource Mgmt. University of Montana (1984)

B.A.S. Land Surveying/Geomatics Great Basin College (2015)

RELEVANT BPA TRAINING

1998-2011 - RTK & Static GPS Survey Training

2015 - OPUS Projects Manager's Training

2016 - MicroStation Basics, InRoads Survey Fundamentals, and OpenRoads Survey Technology

REGISTRATIONS

Professional Land Surveyor: (MT) (OR) (ID) (WA) (UT) (AK) (SD) (ND) (MN) (CO) (WY)

CFedS - Certified Federal Surveyor 2007 - Certificate No. 1006

EXPERIENCE

1995 - Present: DJ&A, P.C., (Missoula, MT)

1988 - 1995: Louisiana Pacific Corporation (Missoula, MT)

Bonneville Power Administration (BPA) – Kerr Dam Substation (Polson, MT) DJ&A was responsible for the research and determination of the BPA portion of one of the existing substations near Kerr Dam. The project involved surveying the location within the PLSS system, creating a road easement from the county road and location of the parcel based upon the BPA dead-end tie point. The survey was located on a tribal reservation and required research within the tribal lands offices. Parcel corners were placed and a retracement Certificate of Survey was prepared and filed for the parcel according to state statute with the county Clerk and Recorders office and submitted as hard copy and electronic project documents to the client. Contract Amount: $9K. **Responsibilities:** As Project Manager and project surveyor, Kurt performed all courthouse and tribal lands research for the project. In addition, he performed the field search for cadastral corners, private boundary and RW monument search. He prepared, reviewed and filed the boundary survey COS with the appropriate county.

Bonneville Power Administration – Rattlesnake - Clinton (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services for 14 miles of 230kV transmission line location and right of way surveys. DJ&A was tasked with conducting detailed records research, project horizontal and vertical control surveys, cadastral corner and property corner search and field surveys, existing transmission line structure surveys, right of way encroachment surveys, transmission line right of way centerline calculations, monumentation of tower structure centers and point on tangents (POT's), post and marking of transmission line right of ways with BPA carsonite signage posts, the preparation and filing of a certificate of survey documenting the transmission line right of way with the county clerk and recorder office, and the preparation and submittal of hard copy and electronic project documents to the client. Contract Amount: $214K. **Responsibilities:** As project surveyor, Kurt was responsible for the field crew coordination, data processing, data review and QC review for the retracement COS.

PPL Generation - Rainbow Dam Redevelopment Project (Great Falls, MT) DJ&A provided extensive surveying and mapping services in support of the construction of a multi-million dollar hydro generation plant over a four-year period. Services included: detailed records and document research; property boundary and cadastral surveys through eighteen (18) sections; horizontal and vertical survey control support for ten miles of aerial imagery and mapping; establishing high order project control monuments, conducting detailed topographical and planimetric site mapping (using terrestrial laser scanner, GPS, and Total Station) of approximately 100-acre site surrounding the power

generation site; survey and mapped over ten miles of transmission lines and utility right of way corridors; preparing utility easement exhibits; surveying identified wetland delineation sites; and providing project construction staking services including structure staking of 10 miles of new transmission lines. DJ&A was also tasked with conducting as-constructed surveys and maps and providing the client with drawings and volumetric and quantity calculation reports. Contract Amount: $275K. **Responsibilities:** As the project surveyor, Kurt was responsible for field research, field surveys, laser scanning, processing of data, data review, crew coordination and QC for field deliverables.

Western Area Power Administration (WAPA) – Transmission Lines (Southeast, MT) DJ&A was responsible for project coordination with the aerial LiDAR and ortho imagery client for remote sensing acquisition services of approximately 750 miles of transmission lines. DJ&A was tasked with providing the GPS surveys for project horizontal and vertical control; placement and survey of aerial photo targets and photo identification points; providing aerial acquisition GPS base station support services; and conducting aerial LiDAR verification surveys of ground surfaces and overhead transmission conductor line heights using terrestrial laser scanner and GPS technologies. Work was completed as subconsultant to Merrick. Subcontract Amount: $120K. **Responsibilities:** As project surveyor, Kurt was responsible for field planning, crew coordination, field research, data processing, data review and final data deliverable development.



GEORGE MARSHALL, PLS – Survey Manager

Since 1987, **George has participated in all facets of BPA surveys** with increasing levels of responsibility including instrument technician, party chief, contractor project manager, and most recently BPA Survey Project Manager. Throughout his surveying career, George has become intimately familiar with the nature of all the various types and technical aspects of the survey portions of BPA projects, including: new transmission line routes, access roads, and construction surveys; transmission line rebuild surveys, impairment and upgrade studies; and topographic surveys. George has been at the forefront of learning, implementing, and improving the methods of use and application of technological advances in survey equipment and software as indicated by his early training in GPS survey grade products, fast static and RTK processing. George is an expert in all field, computational, and organizational aspects of BPA surveys, as well as in directly coordinating with BPA's Realty and Engineering Divisions, and supervising BPA contract project teams.

A B C D F G H I K

Years of Experience: 30

EDUCATION

B.A. Architecture and Planning
Princeton University (1974)

RELEVANT BPA TRAINING

Trimble (Sunnyvale 1994-1995) GPS survey grade products, fast static and RTK processing

Microstation (1999)

BPA Substation safety protocols allowing unescorted access (2012)

REGISTRATIONS

Professional Land Surveyor: (MT) (OR) (ID) (WA)

EXPERIENCE

30 years land surveying
Initial licensure in 1991

Continuing familiarity with and use of Trimble survey grade products including R8, Access, and TBC; also PLS CAD and Microstation with survey module.

BPA – Hooper Springs – Lanes Creek No. 1 (NE of Soda Springs, ID) New 32-mile 230kV powerline project with multiple route changes and significant landowner and county adversity. Contract Amount: $2.8M. **Responsibilities:** BPA Survey Project Manager, directly responsible for all tasking, detailing, mentoring, supervision, and QA/QC review of the BPA survey contractor project team and deliverables to BPA standards. Tasks included static GPS (with OPUS) control and RTK surveys, cadastral surveys, route surveys, access road surveys, large area topographic surveys in re-route areas outside LiDAR corridor, and crossing surveys, LiDAR survey confirmation and augmentation, survey base map, parcel description review and reconciliation, and project phasing. Through careful ground checks and analysis, discovered an error in BPA's contract powerline engineer's PLSS CAD project parameter setup. Coordinated closely with the COTR, and BPA and contract realty specialists, mappers, and powerline and access road engineers.

BPA – Wautoma–Ostrander No. 1 (Sunnyside, WA to Portland, OR) 162-mile, 500kV line upgrade survey. **Responsibilities:** BPA Survey Project Manager, directly responsible for all tasking, detailing, mentoring, supervision, and QA/QC review of the BPA survey contractor project team and deliverables to BPA standards. Tasks included static GPS (with OPUS) control and RTK surveys, LiDAR and crossings verification and augmentation by way of tower and attachment point checks, and topographic survey of critical areas.

BPA – Grand Coulee-Bell No. 6 (Grand Coulee to Spokane, WA) 75-mile, parallel, new 230kV transmission line survey within existing right-of-way. **Responsibilities:** Contract Survey Project Manager reporting directly to COTR, responsible for all tasking, detailing, mentoring, supervision, and QA/QC review of the BPA survey contractor project team and deliverables to BPA standards. Tasks included centerline survey, RTK and conventional location survey, cadastral, route, topographic, and crossing surveys, all survey computations, survey base map, and project phasing.

BPA – McNary to John Day (Oregon and Washington along the Columbia River) 84-mile, new 230kV transmission line survey**. Responsibilities:** Contract Survey Project Manager reporting directly to COTR, responsible for all tasking, detailing, mentoring, supervision, and QA/QC review of the BPA survey contractor project team and deliverables to BPA standards. Tasks included static GPS control (150 points astride length of project established and processed in 12 days), RTK and conventional location survey, cadastral, route, topographic, and crossing surveys, all survey computations, survey base map, and project phasing.

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BOB RINFRET, PLS – Project Surveyor

Bob is a registered Professional Land Surveyor in two states (Montana and Wisconsin) and is an experienced terrestrial laser scanner and survey technician with over 8 years of both field and office experience. Bob has a strong computer background and is responsible for survey data reduction, analysis and mapping. He is highly proficient in MicroStation InRoads having completed **virtually all of his work with his previous employer in InRoads.** Bob has furthered his preparations for BPA work by recently obtaining his **OPUS Project Manager's Certification** as well as completing **a full-suite of MicroStation training, including Open Roads.** Bob is well versed in many types of surveys, including boundary, topographic, ALTA's, and cadastral and subdivision of sections.

A B C D **E** F G H I J K

Years of Experience: 8

EDUCATION

B.S. Environmental Science and Surveying, Otterbein University (2005)

RELEVANT BPA TRAINING

2016 - MicroStation Basics, InRoads Survey Fundamentals, and OpenRoads Survey Technology

2015 - OPUS Projects Manager's Training

Courses in Land Surveying/Computer Applications

GIS Programming Coursework

GIS mapping, remote sensing, GeoMedia, and ESRI software

REGISTRATIONS

Professional Land Surveyor: (MT) (WI)

EXPERIENCE

2014 – Present: DJ&A, P.C. (Missoula, MT)

2011-2014: Hulbert Engineering (Binghamton, NY)

NorthWestern Energy (NWE) – Bozeman Gas Transmission Re-Route Surveys (Bozeman, MT) DJ&A worked closely with the client's project manager and right of way group in coordinating records research and field surveys to meet the clients accelerated time schedules. DJ&A was tasked with conducting horizontal and vertical static GPS project control surveys, land owner access contacts, ownership and land document records research, gas transmission line location surveys, topographic strip mapping surveys, valve station site surveys, property boundary and state highway and interstate highway right of way surveys, land net cadastral surveys for sectional breakdowns, preparation of plan and profile drawing sheets in AutoCAD civil 3D, preparation of strip legal utility easement corridor descriptions and exhibits in support of re-routing high pressure gas transmission lines. Contract Amount: $175K. **Responsibilities:** As a project surveyor and land survey office technician, Bob was responsible for review of existing records documentation, field survey data QA/QC and oversight of drawings, maps and exhibit preparation.

NorthWestern Energy (NWE) – Rattlesnake to Deer Creek 161kV Transmission Line (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services covering 7 miles of line and structures. DJ&A was tasked with conducting review of the existing transmission line record plans and profile drawings, establishment of horizontal and vertical project control using GPS, conducting transmission line ground profile surveys, providing structure, insulator attachment point and conductor line surveys using terrestrial laser scanner technology, conducting ground cross-sections and develop topographic mapping drawings, preparing transmission line plan and profile drawings and structure and conductor line ground clearance exhibits. Contract Amount: $52K. **Responsibilities:** As a project surveyor and land survey office technician, Bob was responsible for review of existing records documentation, field survey data QA/QC and oversight of drawings, maps and exhibit preparation.

NorthWestern Energy (NWE) – Spectra Substation (Buffalo, MT) DJ&A was tasked with staking for the electric substation. This required us to follow the scope outlined by the client while providing the contractor critical information and clear communication as to the needed staking elements. This was done in a way that enabled the contractor to perform the work in an efficient and accurate manner, and satisfied the needs of the client within the scope of the contract. Contract Amount: $30K. **Responsibilities:** As a project surveyor and land survey office technician, Bob was responsible for review of existing records documentation, field survey data QA/QC and oversight of drawings, maps and exhibit preparation.



JEFF CYR, PLS – Project Surveyor

Jeff is a Professional Land Surveyor, with 21 years of experience, capable of performing a variety of design, topographic and construction surveys. He is a specialist in construction design and construction surveying and has become our clear in-house expert. Jeff is very proficient with many conventional surveying software packages, including AutoDesk Civil 3D, **MicroStation, Trimble Business Center,** and Leica LGO Office. Jeff is also very proficient in the use of Trimble GNSS equipment, and Leica robotic total stations. When DJ&A acquires new technologies, Jeff is often tasked with mastering the technology and then training other surveyors.

A B C D E F G H I J K

Years of Experience: 21

EDUCATION

B.A. Physics (1992)
B.A. Computer Science
University of MT (1992)

REGISTRATIONS

PLS – (MT) 1998 – present

TRAINING

AutoCAD Civil 3d Surveying

AFFILIATIONS

Montana Association of Registered Land Surveyors (MARLS)

EXPERIENCE

2007- Present: DJ&A, P.C. (Missoula, MT)

2000 – 2007: Eli & Associates (Missoula, MT)

1994 – 2000: Territorial Engineering & Surveying (Missoula, MT)

1988 – 1993: Burch Construction (Dixon, MT)

NorthWestern Energy (NWE) – Mill Creek Generation Station (Anaconda, MT) DJ&A was responsible for the surveying and engineering services in connection with the development of a complex gas-fired electrical generation plant (on an existing EPA superfund site) to support existing wind generation line-load inconsistencies. The project included: project coordination; detailed land records and documentation research; establishing project control; filing legal property boundary surveys; topographic and planimetric mapping of utility corridors and gas compressor and electrical generation plant site surveys, existing electrical substation and overhead transmission line corridor surveys (using high definition terrestrial laser scanner); state highway and railroad right of way surveys; construction staking surveys for access roadways and site development; office calculations and computations including design stakeout points, earthwork volumetric quantity determination, easements and property boundaries, ground surfaces and multiple exhibits. Contract Amount: $260K. **Responsibilities:** As a project surveyor, Jeff was responsible for field survey operations and the facility construction staking activities including coordination with the client and contractor.

NorthWestern Energy (NWE) – Station W (Cut Bank, MT) DJ&A was tasked with surveying, mapping, engineering and staking for two gas compressor stations near Cut Bank, Montana. This included doing a control survey, a boundary survey, and a topographic survey, completing a grading and drainage plan, and staking the site for construction. Contract Amount: $17K. **Responsibilities:** As a project surveyor, Jeff was responsible for field survey operations and the facility construction staking activities including coordination with the client and contractor.

NorthWestern Energy (NWE) - Beaver Creek – (Harve, MT) DJ&A was tasked with surveying, and staking for two pipe crossings on Beaver Creek just south of Havre, Montana. This included doing a control survey, a boundary survey, and a topographic survey, preparing an easement exhibit and performing the construction staking necessary for the underground bore under Beaver creek for two gas transmission lines. Contract Amount: $13K. **Responsibilities:** As a project surveyor, Jeff was responsible for field survey operations and the facility construction staking activities including coordination with the client and contractor.



JOHN HARWOOD – Land Survey Office Technician / Drafter/CAD Operator II / Cartographic Technician

John spent the majority of the first 12 years of his 25-year career in the field as a surveyor before transitioning to his current role where he is responsible for drafting and mapping on projects such as transmission lines, roads, and more. **Much of his work has been in MicroStation** particularly while providing right of way plans and exhibits and doing the mapping for Western Federal Lands Highway Division over a 15-year contract period. He **recently completed a full-suite of trainings targeting the latest versions of MicroStation, InRoads and OpenRoads.** John also has completed CAD services for GIS data base layers to include topographic and planimetric features along with CAD site mapping. He also has experience as a Cartographic Technician including experience with ESRI ArcGIS and ArcMap.

A B C D E F G H I J K

Years of Experience: 25

EDUCATION

Civil Engineering (2-Years) Montana State University

A.A.S. in Surveying, 2-year degree, Flathead Valley Community College (1986)

RELEVANT BPA TRAINING

2016 - MicroStation Basics, InRoads Survey Fundamentals, and OpenRoads Survey Technology

Computer Systems - 30 hr. course

Advanced CAD Drafting - more than 40 hours formal training courses

EXPERIENCE

2015-Present: DJ&A, P.C. (Missoula, MT)

1989 – 2012: DJ&A, P.C. (Missoula, MT)

1987 – 1988: Mid Valley Engineering (Modesto, CA)

PPL Generation - Rainbow Dam Redevelopment Project (Great Falls, MT) DJ&A provided extensive surveying and mapping services in support of the construction of a multi-million dollar hydro generation plant over a four-year period. Services included: detailed records and document research; property boundary and cadastral surveys through eighteen (18) sections; horizontal and vertical survey control support for ten miles of aerial imagery and mapping; establishing high order project control monuments, conducting detailed topographical and planimetric site mapping (using terrestrial laser scanner, GPS, and Total Station) of approximately 100-acre site surrounding the power generation site; survey and mapped over ten miles of transmission lines and utility right of way corridors; preparing utility easement exhibits; surveying identified wetland delineation sites; and providing project construction staking services including structure staking of 10 miles of new transmission lines. DJ&A was also tasked with conducting as-constructed surveys and maps and providing the client with drawings and volumetric and quantity calculation reports. Contract Amount: $275K. **Responsibilities:** As a senior CAD technician, John was responsible for preparing topographic and planimetric drawing sets.

US Bureau of Reclamation - Yellowtail Dam to Afterbay Dam Transmission Line (Fort Smith, MT) DJ&A was tasked with the survey and mapping of approximately 6 miles of overhead transmission line route within the Crow Indian Reservation. Survey included establishing project control in reference to Montana State Plane Coordinate System, ties to existing transmission lines and substation structures, ground mapping for new transmission line location, land ownership property boundary ties, development of topographic mapping and plan and profile drawing sheets. Contract Amount: $25K. **Responsibilities:** As a senior CAD technician, John was responsible for preparing topographic and planimetric drawing sets.

NorthWestern Energy- Helena High Pressure Gas Pipeline Re-route (Helena, MT) DJ&A was tasked with providing survey and mapping services in support of re-routing a high pressure pipeline in an urban area of the City of Helena, Montana. The survey consisted of a thorough search of record documents through approximately a 4-mile corridor of commercial and residential properties, establishment of horizontal and vertical project control surveys using GPS, Interstate 15 right of way and property boundary surveys, existing gas transmission line location surveys, topographic and planimetric site surveys, cadastral corner search and survey ties, development of plan and profile drawing sheets and exhibits. Contract Amount: $35K. **Responsibilities:** As a senior CAD technician, John was responsible for preparing topographic and planimetric drawing sets.

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MARK LEHMAN – Land Survey Office Technician / Drafter/CAD Operator II / Cartographic Technician

Mark is responsible for drafting utility systems, site maps, highway and road design, and more. He has 39 years of experience and **is proficient in the use of MicroStation,** in large part because of the drafting he completed for Western Federal Lands Highway Division over a 15-year contract period. **Mark recently completed trainings in InRoads and OpenRoads**. He is also proficient in AutoCAD software, including Civil 3D, and has experience in ArcGIS. Mark has completed DJ&A's drawings for Bonneville Power Administration, Montana Department of Environmental Quality projects, US Bureau of Reclamation projects, Montana Department of Transportation projects as well as numerous projects for the Federal Highway Administration.

A B D E F G H I J K

Years of Experience: 39

RELEVANT BPA TRAINING

2016 - MicroStation Basics, InRoads Survey Fundamentals, and OpenRoads Survey Technology

EXPERIENCE

1985 – Present: DJ&A, P.C. (Missoula, MT)

1983 – 1985: Freelance Geological Drafting (Missoula, MT)

1976 – 1983: Exxon Minerals Co. (Missoula, MT)

Bonneville Power Administration (BPA) – Kerr Dam Substation (Polson, MT) DJ&A was responsible for the research and determination of the BPA portion of one of the existing substations near Kerr Dam. The project involved surveying the location within the PLSS system, creating a road easement from the county road and location of the parcel based upon the BPA dead-end tie point. The survey was located on a tribal reservation and required research within the tribal lands offices. Parcel corners were placed and a retracement Certificate of Survey was prepared and filed for the parcel according to state statute with the county Clerk and Recorders office and submitted as hard copy and electronic project documents to the client. Contract Amount: $9K. **Responsibilities:** As a senior CAD technician, Mark was responsible for the development and preparation of the final project, CAD drawing files and documents, and the CAD data files.

Bonneville Power Administration – Rattlesnake - Clinton (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services for 14 miles of 230kV transmission line location and right of way surveys. DJ&A was tasked with conducting detailed records research, project horizontal and vertical control surveys, cadastral corner and property corner search and field surveys, existing transmission line structure surveys, right of way encroachment surveys, transmission line right of way centerline calculations, monumentation of tower structure centers and point on tangents (POT's), post and marking of transmission line right of ways with BPA carsonite signage posts, the preparation and filing of a certificate of survey documenting the transmission line right of way with the county clerk and recorder office, and the preparation and submittal of hard copy and electronic project documents to the client. Contract Amount: $214K. **Responsibilities:** As a senior CAD technician, Mark was responsible for the development and preparation of the final project, CAD drawing files and documents, and the CAD data files.

NorthWestern Energy (NWE) – Spectra Substation (Buffalo, MT) DJ&A was tasked with staking for the electric substation. This required us to follow the scope outlined by the client while providing the contractor critical information and clear communication as to the needed staking elements. This was done in a way that enabled the contractor to perform the work in an efficient and accurate manner, and satisfied the needs of the client within the scope of the contract. Contract Amount: $30K. **Responsibilities:** As a senior CAD technician, Mark was responsible for the development and preparation of the project CAD drawing files and documents and the CAD data files.

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DANA THORN – Drafter/CAD Operator II

Dana serves as a survey and mapping specialist for DJ&A. She has five years of experience in working with AutoCAD Civil 3D, ArcGIS and survey programs and **recently completed trainings in MicroStation, including InRoads and OpenRoads.** Dana has prepared and completed numerous drawings and exhibits including: detailed topographic and planimetric site maps, plan and profile sheets, utility right of way exhibits as well as providing survey data processing analysis and construction stakeout reports to support field survey activities.

A B C D E F G H I J K

Years of Experience: 5

EDUCATION

Flathead Valley Community College - AAS Surveying (2011)

RELEVANT BPA TRAINING

2016 - MicroStation Basics, InRoads Survey Fundamentals, and OpenRoads Survey Technology

EXPERIENCE

2015 - Present: DJ&A, P.C. (Missoula, MT)

2011-2015: Erickson Contract Survey (Sidney, MT)

NorthWestern Energy (NWE) – Bozeman Gas Transmission Re-Route Surveys (Bozeman, MT) DJ&A worked closely with the client's project manager and right of way group in coordinating records research and field surveys to meet the clients accelerated time schedules. DJ&A was tasked with conducting horizontal and vertical static GPS project control surveys, land owner access contacts, ownership and land document records research, gas transmission line location surveys, topographic strip mapping surveys, valve station site surveys, property boundary and state highway and interstate highway right of way surveys, land net cadastral surveys for sectional breakdowns, preparation of plan and profile drawing sheets in AutoCAD Civil 3D, preparation of strip legal utility easement corridor descriptions and exhibits in support of re-routing high pressure gas transmission lines. Contract Amount: $175K. **Responsibilities:** Dana was responsible for CAD drawing and exhibit preparation support.

NorthWestern Energy (NWE) – Spectra Substation (Buffalo, MT) DJ&A was tasked with staking for the electric substation. This required us to follow the scope outlined by the client while providing the contractor critical information and clear communication as to the needed staking elements. This was done in a way that enabled the contractor to perform the work in an efficient and accurate manner, and satisfied the needs of the client within the scope of the contract. Contract Amount: $30K. **Responsibilities:** Dana was responsible for CAD drawing and exhibit preparation support.

NorthWestern Energy (NWE) - Stevensville Substation (Stevensville, MT) DJ&A was tasked with surveying and staking for the electric substation. We were required to perform a control survey, record a Certificate of Survey and perform all construction staking necessary for construction of the substation. This required us to follow the scope outlined by the client while providing the contractor critical information and clear communication as to the needed staking elements. Contract Amount: $20K. **Responsibilities:** Dana was responsible for CAD drawing and exhibit preparation support.

NorthWestern Energy (NWE) – Station W (Cut Bank, MT) DJ&A was tasked with surveying, mapping, engineering and staking for two gas compressor stations near Cut Bank, Montana. This included doing a control survey, a boundary survey to topographic survey, mapping the site, completing grading and drainage plan and staking the site for construction. Contract Amount: $17K. **Responsibilities:** Dana was responsible for CAD drawing and exhibit preparation support.



ANDY SCALISE – Cartographic Technician / GIS Technician

Andy has over 5 years of GIS and cartography experience working on federal agency (US Forest Service) mapping projects within Region 1 of the USFS. He is accustomed to working with and managing large data sets efficiently. Andy is knowledgeable in datum projections and coordinate systems and capable of producing high quality and accurate maps. He is knowledgeable of GIS and cartography standards and familiar with and understands the common symbology used in cartography. **He earned a B.S. in Geography / Cartography and GIS Sciences and Technology in 2014 and is actively pursuing his GISP.**

B C E F G H I J K

Years of Experience: 5

EDUCATION

B.S. Geography / Cartography and GIS Sciences and Technology, University of Montana (2014)

EXPERIENCE

2015- Present: DJ&A, P.C. (Missoula, MT)

2010-2015: USDA Forest Service Rocky Mountain Research Station (Missoula, MT)

2006-2008: C & H Engineering and Surveying (Bozeman, MT)

USFS (Fire Science Lab) – Briggs Equation Validation (Missoula, MT) Approximately 1-acre of eight controlled agricultural burns were mapped in ArcGIS from field notes. Data was then attached to these burns including readings from meteorological stations as well as radio sound balloons. This data was then plugged into an automated Briggs plume rise calculator built independently in Excel. The results of these calculations were then compared to LiDAR point clouds of individual smoke plumes to attempt to validate the Briggs method of calculating buoyant smoke plumes. All data was stored and managed in geo databases. This project went on to be published in the International Journal of Laser Optics. Contract Amount: $40K. **Responsibilities:** GIS Technician responsible for data processing, manipulation, visualization, product deliverables in ArcGIS and Adobe Illustrator.

USFS – Mapping the Coram Experimental Forest (Missoula, MT) Mapped 5 km of forest centered on the Forest Service Coram Experimental Forest. Collected and managed all data related to the effort including topography, topology and climate. Utilized ArcGIS software for data management and initial compilation. Transferred to Adobe software for visual enhancement. Contract Amount: $10K. **Responsibilities:** GIS Technician responsible for data processing, manipulation, visualization, product deliverables in ArcGIS and Adobe Illustrator.

USFS – Processing Daily Burn Perimeters for Aldo Leopold (Missoula, MT) Input GPS, infrared and MODIS data into ArcGIS for 21 fires across the US varying in size. Utilized this data to delineate daily burn perimeters for each fire including acreage burnt. All data then passed to senior scientists for input into an algorithm. Contract Amount: $20K. **Responsibilities:** GIS Technician responsible for data processing, manipulation, visualization, product deliverables in ArcGIS and Adobe Illustrator.



BEN SUNDY – GIS Analyst / GIS Technician

Ben has acted as a geospatial technician providing project support for the Bonneville Power Administration contracts, including data entry and manipulation, documentation of procedures, cartographic production and producing finalized data deliverables. Additionally, Ben has provided tech support for field data collection by means of preparing and maintaining field devices, managing the flow of data in and out of the office, as well as post processing and scrubbing data to be made ready for use in ArcGIS. Ben's diverse experience, both in the office and the field, make him an exceptional GIS technician. He excels in a range of areas including maintaining complex geodatabases, performing substantiated GIS analyses, interpreting and analyzing aerial imagery, reading maps and legal documents, and collecting and validating data in the field. Ben anticipates obtaining his GISP in July 2016.

E J

Years of Experience: 5

EDUCATION

B.A. Geography, with options in GIS & Cartography and Community & Environmental Planning University of Montana (2009)

EXPERIENCE

2015 - Present: DJ&A, P.C. (Missoula, MT) GIS Analyst

2014: Sanborn Maps (Doha, Qatar) Field Data Technician

2012 - 2014: Rocky Mountain Research Station (Kalispell, MT) Hydrologic Mapping Technician

2011 - 2012: Photo Science Inc. (Atlanta, GA) GIS Technician

2010 - 2011: NOMADAS Outdoor Services (Punta Arenas, Chile) Cartographer

Bonneville Power Administration (BPA) – Kalispell – Kerr (Western MT) This project included the field design and layout of roads accessing 42 miles of transmission line between the Kalispell and Kerr substations. Project tasks included use of BPA EGIS system, route staking, GIS data production, specification preparation, and cost estimation. Project challenges included working closely with land owners to build trust and discover reasonable solutions to gain proper access to the transmission line. Contract Amount: $165K. **Responsibilities:** Ben served as a GIS Analyst responsible for data processing, data management, and data preparation.

Bonneville Power Administration (BPA) – Rattlesnake - Garrison (Western MT) This project included the field design and layout of roads accessing 62 miles of transmission line between the Rattlesnake and Garrison substations. Project tasks included use of BPA EGIS system, route staking, GIS data production, specification preparation, and cost estimation. Project challenges included working closely with land owners to build trust and discover reasonable solutions to gain proper access to the transmission line. Contract Amount: $190K. **Responsibilities:** Ben served as a GIS Analyst responsible for data processing, data management, and data preparation.

Bonneville Power Administration – Montana Access Road Inventory (Montana) This project included the identification and remediation of access road deficiencies for approximately 400 miles of road accessing transmission lines in rural Montana. DJ&A performed a condition assessment, completed an inventory using a Trimble GeoXT unit, and input data into an ArcGIS database platform consistent with BPA protocols. Based on collected data, DJ&A then designed improvements to these low-volume, rural roads. This project is similar to other access road asset management programs that DJ&A has completed for BPA throughout Washington, Oregon, Idaho, and Montana. Contract Amount: $149K. **Responsibilities:** Ben served as a GIS Analyst responsible for data processing, data management, and data preparation.

Bonneville Power Administration – Idaho Access Road Inventories & Conditions Assessments (Idaho) DJ&A was responsible for performing condition assessments, inventories, database management, and design for improvements to 6 miles of low-volume, rural roads. These roads provide access to BPA's transmission lines located near Chehalis, Washington. Duties included preparing road plans and specifications for construction after having completed an inventory of the entire access road and performing conditions assessments for roadway, culverts, drainage ditches, and adjacent slopes. All data was recorded in an ArcGIS database consistent with BPA protocols. When construction begins, DJ&A will be responsible for providing construction support and inspection services. Contract Amount: $133K. **Responsibilities:** Ben served as a GIS Analyst responsible for data processing, data management, and data preparation.

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JOHN SHIREY, LSI – Survey Party Chief

John is an experienced Crew Chief with 23 years of experience as a surveyor and instrument man in both GPS and conventional surveying techniques. He has been on surveying and mapping projects throughout Montana and in several different states including Idaho, Oregon, Washington and the remote islands of southeast Alaska. John has extensive experience using both resource grade GPS and survey grade GNSS in static and RTK applications.

A B C D E F G I J

Years of Experience: 23

EDUCATION

B.A. Outdoor Leadership
University of Oregon (1991)

AFFILIATIONS

Montana Association of Registered Land Surveyors (MARLS)

REGISTRATIONS

Land Surveyor Intern (LSI) (MT)

EXPERIENCE

1995 – Present: DJ&A, P.C. Missoula (MT)

1992 – 1995: Martinsen Surveys, Missoula (MT)

NorthWestern Energy (NWE) – Mill Creek Generation Station (Anaconda, MT) DJ&A was responsible for the surveying and engineering services in connection with the development of a complex gas-fired electrical generation plant (on an existing EPA superfund site) to support existing wind generation line-load inconsistencies. The project included: project coordination; detailed land records and documentation research; establishing project control; filing legal property boundary surveys; topographic and planimetric mapping of utility corridors and gas compressor and electrical generation plant site surveys, existing electrical substation and overhead transmission line corridor surveys (using high definition terrestrial laser scanner); state highway and railroad right of way surveys; construction staking surveys for access roadways and site development; office calculations and computations including design stakeout points, earthwork volumetric quantity determination, easements and property boundaries, ground surfaces and multiple exhibits. Contract Amount: $260K. **Responsibilities:** As a survey party chief, John was responsible for the project field survey data collection.

NorthWestern Energy (NWE) – Bozeman Gas Transmission Re-Route Surveys (Bozeman, MT) DJ&A worked closely with the client's project manager and right of way group in coordinating records research and field surveys to meet the clients accelerated time schedules. DJ&A was tasked with conducting horizontal and vertical static GPS project control surveys, land owner access contacts, ownership and land document records research, gas transmission line location surveys, topographic strip mapping surveys, valve station site surveys, property boundary and state highway and interstate highway right of way surveys, land net cadastral surveys for sectional breakdowns, preparation of plan and profile drawing sheets in AutoCAD civil 3D, preparation of strip legal utility easement corridor descriptions and exhibits in support of re-routing high pressure gas transmission lines. Contract Amount: $175K. **Responsibilities:** As a survey party chief, John was responsible for the project field survey data collection.

NorthWestern Energy (NWE) - Stevensville Substation (Stevensville, MT) DJ&A was tasked with surveying and staking for the electric substation. We were required to perform a control survey, record a Certificate of Survey and perform all construction staking necessary for construction of the substation. This required us to follow the scope outlined by the client while providing the contractor critical information and clear communication as to the needed staking elements. Contract Amount: $20K. **Responsibilities:** As a senior survey party chief, John was responsible for the project field survey data collection.



JOE CONE – Survey Party Chief

Joe is an experienced Party Chief with 19 years of experience in surveying. His experience has included transmission line surveys, including for BPA, construction surveys, boundary surveys, cadastral surveys, and private property surveys. Joe has experience as a chainman, an instrument man and has over seven years of experience as a crew chief on two- and three-person survey crews. Joe has extensive experience using both resource grade GPS and survey grade GNSS in static and RTK applications and terrestrial laser scanner operations.

A B C D E F G I J

Years of Experience: 19

EDUCATION

Flathead Valley Community College – 2 years forestry

Hazardous Waste Operations Site Safety Training (HAZWOPER) – 40 hour OSHA certified course plus annual 8 hour refresher courses

Ground Penetration Radar (GPR) Training

AFFILIATIONS

Montana Association of Registered Land Surveyors (MARLS)

EXPERIENCE

1996 – Present: DJ&A, P.C. Missoula (MT)

U.S. Forest Service – Wildland Fire Fighter – 10 years

Bonneville Power Administration – Rattlesnake - Clinton (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services for 14 miles of 230kV transmission line location and right of way surveys. DJ&A was tasked with conducting detailed records research, project horizontal and vertical control surveys, cadastral corner and property corner search and field surveys, existing transmission line structure surveys, right of way encroachment surveys, transmission line right of way centerline calculations, monumentation of tower structure centers and point on tangents (POT's), post and marking of transmission line right of ways with BPA carsonite signage posts, the preparation and filing of a certificate of survey documenting the transmission line right of way with the county clerk and recorder office, and the preparation and submittal of hard copy and electronic project documents to the client. Contract Amount: $214K. **Responsibilities:** As a senior survey party chief, Joe was responsible for the project coordination of field survey activities and field survey data collection.

Western Area Power Administration (WAPA) – Transmission Lines (Southeast, MT) DJ&A was responsible for project coordination with the aerial LiDAR and ortho imagery client for remote sensing acquisition services of approximately 750 miles of transmission lines. DJ&A was tasked with providing the GPS surveys for project horizontal and vertical control; placement and survey of aerial photo targets and photo identification points; providing aerial acquisition GPS base station support services; and conducting aerial LiDAR verification surveys of ground surfaces and overhead transmission conductor line heights using terrestrial laser scanner and GPS technologies. Work was completed as subconsultant to Merrick. Subcontract Amount: $120K. **Responsibilities:** As a senior survey party chief, Joe was responsible for the project coordination of field survey activities and field survey data collection.

Western Area Power Administration (WAPA) – Transmission Lines (North Central, MT) DJ&A was responsible for project coordination with the client for aerial LiDAR and ortho imagery remote sensing acquisition services for approximately 450 miles of transmission lines. DJ&A was tasked with providing the GPS surveys for project horizontal and vertical control; placement and survey of aerial photo targets and photo identification points, provided aerial acquisition GPS bas station support services, and conducted aerial LiDAR verification surveys of ground surfaces and overhead transmission conductor line height check using terrestrial laser scanner and GPS technologies. Subcontract Amount: $50K. **Responsibilities:** As a senior survey party chief, Joe was responsible for the project coordination of field survey activities and field survey data collection.

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JASON HOLLER – Survey Party Chief

Jason is a land surveyor technician who has worked for DJ&A for the past 10 years. He has experience working on a wide variety of jobs using both modern and traditional survey techniques, working on projects for Bonneville Power Administration, National Park Service, the US Forest Service, US Bureau of Reclamation and Federal Highway Administration. He has experience working both independently and with teams and has developed strong interpersonal and leadership skills, as well as the project management skills needed to succeed in any role he is asked to work in. Jason has extensive experience using both resource grade GPS and survey grade GNSS in static and RTK applications and terrestrial laser scanner operations.

A B C D E F G H I J K

Years of Experience: 10

EDUCATION

B.A. Geography, certificate in GIS
University of Montana (2008)

B.A. Media Arts
University of Montana (2008)

TRAINING

Hazardous Waste Operations Site Safety Training (HAZWOPER) 40 hour OSHA certified course plus annual 8 hour refresher courses

AFFILIATIONS

Montana Association of Registered Land Surveyors (MARLS)

EXPERIENCE

2005 – Present: DJ&A, P.C. (Missoula, MT)

NorthWestern Energy (NWE) – Rattlesnake to Deer Creek 161kV Transmission Line (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services covering 7 miles of line and structures. DJ&A was tasked with conducting review of the existing transmission line record plan and profile drawings, establishment of horizontal and vertical project control using GPS, conducting transmission line ground profile surveys, providing structure, insulator attachment point and conductor line surveys using terrestrial laser scanner technology, conducting ground cross-sections and develop topographic mapping drawings, preparing transmission line plan and profile drawings and structure and conductor line ground clearance exhibits. Contract Amount: $52K. **Responsibilities:** As chief surveyor, Jason was responsible for oversight of multiple field survey crews, field data collection QA/QC and coordination between field and office.

NorthWestern Energy (NWE) – Bozeman Gas Transmission Re-Route Surveys (Bozeman, MT) DJ&A worked closely with the client's project manager and right of way group in coordinating records research and field surveys to meet the clients accelerated time schedules. DJ&A was tasked with conducting horizontal and vertical static GPS project control surveys, land owner access contacts, ownership and land document records research, gas transmission line location surveys, topographic strip mapping surveys, valve station site surveys, property boundary and state highway and interstate highway right of way surveys, land net cadastral surveys for sectional breakdowns, preparation of plan and profile drawing sheets in AutoCAD civil 3D, preparation of strip legal utility easement corridor descriptions and exhibits in support of re-routing high pressure gas transmission lines. Contract Amount: $175K. **Responsibilities:** As chief surveyor, Jason was responsible for oversight of multiple field survey crews, field data collection QA/QC and coordination between field and office.

Western Area Power Administration (WAPA) – Transmission Lines (Southeast, MT) DJ&A was responsible for project coordination with the aerial LiDAR and ortho imagery client for remote sensing acquisition services of approximately 750 miles of transmission lines. DJ&A was tasked with providing the GPS surveys for project horizontal and vertical control; placement and survey of aerial photo targets and photo identification points; providing aerial acquisition GPS base station support services; and conducting aerial LiDAR verification surveys of ground surfaces and overhead transmission conductor line heights using terrestrial laser scanner and GPS technologies. Work was completed as subconsultant to Merrick. Subcontract Amount: $120K. **Responsibilities:** As chief surveyor, Jason was responsible for oversight of multiple field survey crews, field data collection QA/QC and coordination between field and office.

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STEVE CUMMINGS – Survey Party Chief

Steve has 22 years of experience in surveying on a regional basis throughout the Pacific Northwest states, under varied terrain and weather conditions. His years of knowledge of GPS data logging and collection in the field has given Steve a keen insight in maintaining quality control of his work. Steve has extensive experience in **long utility corridor route surveys**, land surveying, control surveys, mapping, hydrographic, cadastral, dam deformation, LiDAR and photogrammetric surveys. Steve has extensive experience using both resource grade GPS and survey grade GNSS in static and RTK applications.

A B C D E F G I J

Years of Experience: 22

EDUCATION

B.S. Political Science
University of Montana (1976)

TRAINING

Hazardous Waste Operations Site Safety Training (HAZWOPER) 40 hour OSHA certified course plus annual 8 hour refresher courses

Hazardous Waste Operations Site Safety Training - 40 hr. OSHA Certified Training

AFFILIATIONS

Montana Association of Registered Land Surveyors (MARLS)

EXPERIENCE

1997 – Present: DJ&A, P.C. (Missoula, MT)

1995 – 1997: South Star Surveying, Mt. Pleasant, SC

1993 – 1995: Druyvestein Johnson & Anderson, Missoula, MT

NorthWestern Energy (NWE) – Rattlesnake to Deer Creek 161kV Transmission Line (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services covering 7 miles of line and structures. DJ&A was tasked with conducting review of the existing transmission line record plan and profile drawings, establishment of horizontal and vertical project control using GPS, conducting transmission line ground profile surveys, providing structure, insulator attachment point and conductor line surveys using terrestrial laser scanner technology, conducting ground cross-sections and develop topographic mapping drawings, preparing transmission line plan and profile drawings and structure and conductor line ground clearance exhibits. Contract Amount: $52K. **Responsibilities:** GPS (RTK) field data collection, keeping detailed field notes and data downloading.

Western Area Power Administration (WAPA) – Transmission Lines (Southeast, MT) DJ&A was responsible for project coordination with the aerial LiDAR and ortho imagery client for remote sensing acquisition services of approximately 750 miles of transmission lines. DJ&A was tasked with providing the GPS surveys for project horizontal and vertical control; placement and survey of aerial photo targets and photo identification points; providing aerial acquisition GPS base station support services; and conducting aerial LiDAR verification surveys of ground surfaces and overhead transmission conductor line heights using terrestrial laser scanner and GPS technologies. Work was completed as subconsultant to Merrick. Subcontract Amount: $120K. **Responsibilities:** GPS (RTK) field data collection, keeping detailed field notes and data downloading.

NorthWestern Energy (NWE) – Bozeman Gas Transmission Re-Route Surveys (Bozeman, MT) DJ&A worked closely with the client's project manager and right of way group in coordinating records research and field surveys to meet the clients accelerated time schedules. DJ&A was tasked with conducting horizontal and vertical static GPS project control surveys, land owner access contacts, ownership and land document records research, gas transmission line location surveys, topographic strip mapping surveys, valve station site surveys, property boundary and state highway and interstate highway right of way surveys, land net cadastral surveys for sectional breakdowns, preparation of plan and profile drawing sheets in AutoCAD Civil 3D, preparation of strip legal utility easement corridor descriptions and exhibits in support of re-routing high pressure gas transmission lines. Contract Amount: $175K. **Responsibilities:** GPS (RTK) field data collection, keeping detailed field notes and data downloading.



MIKE SCHMID-SOMMER – Survey Party Chief

M ke is an experienced survey crew chief. His survey background includes expertise in the use of GPS equipment and High Definition Terrestrial Laser Scanning (Leica C-10) equipment. M ke is accustomed to the rigors and project logistics when working on regional survey and mapping projects, having been involved with projects located throughout the western United States **including for Bonneville Power Administration and NorthWestern Energy.** Mike has extensive experience using both resource grade GPS and survey grade GNSS in static and RTK applications and terrestrial laser scanner operations.

A B C D E F G H I J K

Years of Experience: 8

EDUCATION

Associates of Applied Science - Surveying
Flathead Valley Community College (2008)

TRAINING

Hazardous Waste Operations Site Safety Training (HAZWOPER) 40 hour OSHA certified course plus annual 8 hour refresher courses

Ground Penetration Radar (GPR) Training

Hazardous Waste Operations Site Safety Training - 40 hr. OSHA Certified Training

AFFILIATIONS

Montana Association of Registered Land Surveyors (MARLS)

EXPERIENCE

2009 - Present: DJ&A, P.C. (Missoula, MT)

2007-2009 F&H Land Surveying (Whitefish, MT)

Bonneville Power Administration – Rattlesnake - Clinton (Missoula, MT) DJ&A was responsible for project coordination with the client for ground survey services for 14 miles of 230kV transmission line location and right of way surveys. DJ&A was tasked with conducting detailed records research, project horizontal and vertical control surveys, cadastral corner and property corner search and field surveys, existing transmission line structure surveys, right of way encroachment surveys, transmission line right of way centerline calculations, monumentation of tower structure centers and point on tangents (POT's), post and marking of transmission line right of ways with BPA carsonite signage posts, the preparation and filing of a certificate of survey documenting the transmission line right of way with the county clerk and recorder office, and the preparation and submittal of hard copy and electronic project documents to the client. Contract Amount: $214K. **Responsibilities:** As a survey party chief, Mike was responsible for the establishment of line monuments and right of way post and markings.

NorthWestern Energy (NWE) - Stevensville Substation (Stevensville, MT) DJ&A was tasked with surveying and staking for the electric substation in Stevensville, MT. We were required to perform a control survey, record a Certificate of Survey and all construction staking necessary for construction of the substation. This required us to follow the scope outlined by the client while providing the contractor critical information and clear communication as to the needed staking elements. Contract Amount: $20K. **Responsibilities:** As a survey party chief, Mike was responsible for construction staking activities.

NorthWestern Energy (NWE) – Bozeman Gas Transmission Re-Route Surveys (Bozeman, MT) DJ&A worked closely with the client's project manager and right of way group in coordinating records research and field surveys to meet the clients accelerated time schedules. DJ&A was tasked with conducting horizontal and vertical static GPS project control surveys, land owner access contacts, ownership and land document records research, gas transmission line location surveys, topographic strip mapping surveys, valve station site surveys, property boundary and state highway and interstate highway right of way surveys, land net cadastral surveys for sectional breakdowns, preparation of plan and profile drawing sheets in AutoCAD civil 3D, preparation of strip legal utility easement corridor descriptions and exhibits in support of re-routing high pressure gas transmission lines. Contract Amount: $175K. **Responsibilities:** Mike was responsible for the staking and mapping of the utility line.



JAKE MAIER – Survey Party Chief

Jake is an experienced and accomplished surveyor with 10 years of experience performing both engineering and land surveying surveys using GPS and conventional surveying equipment. He has excellent technical and mechanical skills. Jake is accustomed to and can handle the pressure of working in a fast-paced environment based on his prior project experience in the gas and oil industry.

A B C D E F H I J

Years of Experience: 10

EDUCATION

Flathead Valley Community College (January 2009- May 2012)

Edmonds Community College (January 2005- August 2005)

EXPERIENCE

2015 - Present: DJ&A, P.C. (Missoula, MT)

2013-2015: ECS,Inc. (Sidney, MT)

2006-2013: CMG Engineering, Inc. (Kalispell, MT)

NorthWestern Energy (NWE) – Bozeman Gas Transmission Re-Route Surveys (Bozeman, MT) DJ&A worked closely with the client's project manager and right of way group in coordinating records research and field surveys to meet the clients accelerated time schedules. DJ&A was tasked with conducting horizontal and vertical static GPS project control surveys, land owner access contacts, ownership and land document records research, gas transmission line location surveys, topographic strip mapping surveys, valve station site surveys, property boundary and state highway and interstate highway right of way surveys, land net cadastral surveys for sectional breakdowns, preparation of plan and profile drawing sheets in AutoCAD Civil 3D, preparation of strip legal utility easement corridor descriptions and exhibits in support of re-routing high pressure gas transmission lines. Contract Amount: $175K. **Responsibilities:** Jake served as a junior party chief supporting the project with GPS field data collection and corner ties.

Hiland Partners (Kinder-Morgan) – Tyler-Tanner Loop (Williams County, ND) Project consisted of field designing, route staking, construction staking and as-built surveying and mapping of an easement on a 2-mile, 6" crude oil pipeline. Project challenges included re-route of the easement and field design where pipeline came into a block valve assembly on a compressor site. Contract Amount: $53K. **Responsibilities:** Served as survey party chief responsible for data collection and data downloads.

Hiland Partners – West Berg Gathering System (McKenzie County, ND) Project consisted of field designs, route staking and mapping of a 20+ mile crude oil pipeline. Project tasks included defining land ownership boundaries and U.S. Forest Service boundaries, pipeline routing and staking. Contract Amount: $85K. **Responsibilities:** Jake served as a field survey assistant responsible for field notes and data collection.



BRIAN HOLZWORTH, GISP – Survey Manager / GIS Analyst

Brian is a project manager with **27 years of progressive experience in managing remote sensing and GIS projects**. His primary responsibilities include project scope management; planning and resource management; project estimating, technical liaison between production resources and the client; contract/risk management; quality control/quality assurance execution; and revenue management. Brian is proficient in the use of Windows and Unix operating systems, ArcInfo, ArcScan, ArcGrid, ArcTin, ArcEdit, ArcTools, ArcPlot, ArcView, SDE, AML, VPFView, VPF Validator, ERDAS, Primavera SureTrak, MS Office, and MS Project. He has working knowledge of MGE, IGDS, MapInfo, Image Station, and LH Socet. Additionally, he is proficient in developing and managing database construction.

A B C D E G H I J K

Years of Experience: 27

EDUCATION

BA, Political Science; Minor History; Minor East European Affairs,
Colorado State University, (1993)

Hickam AFB, Radar Imagery Analysis (1991)

Goodfellow AFB, Imagery Interpretation (1988)

AFFILIATIONS

Project Management Institute (PMI)

Working toward Project Management Professional (PMP) certification

American Society for Photogrammetry & Remote Sensing (ASPRS)

EXPERIENCE

2000-Present: Merrick & Company

Years with other Firms: 12

Western Area Power Administration, Upper Great Plains Region, 2011-2014 Transmission Line LiDAR Surveying & Modeling. Merrick provided PLS-CADD ready deliverables to WAPA for transmission line modeling and conductor clearance assessment. DJ&A worked as sub consultant on this project. **Responsibilities:** Project manager responsible for the surveying, mapping and modeling for over 6,240 line miles of 100kV and above circuits spanning seven states (North Dakota, South Dakota, Iowa, Nebraska, Missouri, Minnesota, and Montana). DJ&A worked as a subconsultant on this project.

HDR, Inc. - Tri-State Generation and Transmission, Inc., Transmission Line LiDAR Surveying & Modeling. Merrick provided PLS-CADD ready deliverables to HDR for transmission line modeling and conductor clearance assessment. **Responsibilities:** Project manager that supported the surveying and modeling for over 1,500 miles of 100kV and above circuits spanning four states (Colorado, New Mexico, Wyoming, and Nebraska).

Stanley Consultants, Inc. (acting as OE, Transmission Line Owner Engineer). Data was delivered in PLS-CADD for use in as-built determination of conductor to ground, structure and vegetation clearances. LiDAR was collected with a point density in excess of 20-points per square meter. **Responsibilities:** Project Manager responsible for LiDAR and imagery collection and subsequent processing/classification for transmission line projects in Utah and Idaho.

Town of Mansfield (Mansfield, MA) 1"=330' and 1"=600' photography was collected for the Town, with 1"=40' planimetric collection and 1"=100' scale orthophotography being the resulting deliverables. A Digital Terrain Model (DTM) suitable for the production of 2' contours was also produced. **Responsibilities:** Project manager responsible for the development of the GIS photogrammetric base map for the town.

Town of Ipswich - Analytical Surveys, Inc. (Ipswich, MA) Project included analytical aerotriangulation, digital orthophotography, and planimetric/topographic mapping. **Responsibilities:** Project manager responsible for the coordination, and quality assurance of this project,



IAN BERDIE, PMP – Survey Manager

Ian is a Project Management Professional and provides technical leadership and project guidance to a highly skilled remote sensing team. He is responsible for oversight of QSI's energy project portfolio. He effectively manages project resourcing and quality standards, and drives programmatic direction with strategic partners. Ian has also served as a project manager, and managed the Feature Extraction division for Quantum Spatial, where he led a team of specialists in LiDAR point cloud classification and advanced analysis for both utility corridors and wide area projects.

A B C D E G H I J K

Years of Experience: 14

EDUCATION
M.A. Geography
University of Miami (2008)

B.A. Biology, Carleton College (2001)

AFFILIATIONS
Project Management Institute (PMI)

Project Management Institute Portland Chapter

American Society for Photogrammetry and Remote Sensing (ASPRS)

EXPERIENCE
2007-Present: Quantum Spatial

Bonneville Power Administration (BPA) - Southewat LiDAR Mission (2014) QSI completed 212 total miles of transmission line data collection, LiDAR data, orthoimagery, oblique imagery. QSI provided classified .LAS files, a bare earth DEM, a vegetation surface model, and a vegetation height model. 4-band orthoimages were provided at 6" resolution, along with weather data, and locations of all towers, and crossing line locations per BPA engineer's specifications. Value: $191K. **Responsibilities:** Project manager

Confidential Northern California Utility Client - NERC 2013 (California) QSI completed 3,992 total miles of transmission line data collection, feature extraction, rapid clearance assessment reports, orthoimagery, PLS-CADD delivery, and annotated HD Videography. Additionally, QSI extended the data to the vegetation management group by customizing analytics and delivering in our Dashboard 4-D viewer that allows for desktop walkthroughs of clearance detections. The Quantum Spatial utilities modeling division oversaw the production of 15,000+ PLS-CADD Method 1 Structures and achieved an absolute vertical accuracy of 0.15' and an absolute horizontal accuracy of 0.17'. The client's LiDAR specification was 30 ppsm, which QSI exceeded by providing an achieved density of 72 ppsm. Using the Microsoft UltraCam Eagle, a 1.1' photo horizontal spec was achieved while the client' specification was 3.0'. Value: $4.1M. **Responsibilities:** Project manager

2014 Transmission Corridor Survey Projects, Lower Colorado River Authority (LCRA) (Colorado) The Aerial Mapping and LiDAR transmission line survey is comprised of eleven circuits in south central Texas, totaling 221 miles. The survey provided engineering-grade LiDAR and high resolution imagery to LCRA for use in evaluating design and as-built transmission lines. Deliverables included custom planimetrics and LiDAR classifications within a *.bak file. This included Method 1 structures, insulators and attachment points. Custom ASCII files and GeoDatabase was also created. Annotated video and orthomosaiced imagery was also delivered. Value: $180K. **Responsibilities:** Project manager

(2) Technical/Management Proposal

2. Technical Approach

D&A, P.C.
since 1973

2. Technical Approach

List your company's approach/methods, equipment and labor classes for the completion of the following tasks:

At DJ&A, we "hope for the best, plan for the worst." During our many years of surveying in remote and rugged locations, we have learned that there is no substitute for preparation and proper planning. While we recognize that each project is unique, we also recognize the value of a sound general approach for all projects.

For example, in the case of equipment, we supply each crew with a set of standard equipment that will allow them to safely and efficiently perform approximately 85% of typical tasks. We then supplement the standard equipment with project-specific equipment as needed. For example, a crew headed to a heavily wooded area would bring our newest Trimble R10 GNSS equipment in addition to their standard total station. This approach maximizes efficiencies in our work by providing the best available tools to our crews to complete their assignments without unnecessarily burdening them with excess equipment.

Similar to our company's approach to equipment (standard equipment and project-specific equipment), we also have a standard approach in terms of our technical methods and assignment of labor classes (standard approach/project-specific approach). In this section, we have outlined our general approach to all BPA projects in regards to methods, equipment and labor classes. We then address each of these three areas in more detail as related to each of the tasks outlined in the solicitation.

General Approach

<u>Methods</u>

The following general approach will be taken for all projects:

- The survey manager and project surveyor read and understand the scope of work provided by BPA. If clarification is needed, proper requests will be made to BPA's COTR and/or CO;
- DJ&A's project team will review the level of effort that will be required to complete BPA's task order within the allocated project time schedule. Estimates of the total number of hours to complete the project will be made.
- The survey manager and project surveyor will gain an understanding of the size of the project and the delivery schedule desired by BPA to make appropriate personnel assignments;
- Those assigned to the project will explore the site using tools such as BPA's EGIS system, maps, available imagery or Google Earth to become familiar with the location, terrain, and vegetation on the site;
- The survey manager will identify how the field crews will access the site. If necessary, gates or other barriers will be identified and proper permissions and/or keys to gates will be obtained;
- The survey manager, project surveyor, and the survey party chief (survey team) will gain an understanding of any constraints imposed by cultural resource concerns as defined in the scope or that may arise during the project. The survey manager will ensure that all project personnel are aware of the sensitivity associated with this information;
- The survey team will assess any existing or potential state and federal wildfire restrictions that may be in place at the time of the survey;
- The survey team will review the "BPA General Safety Checklist" (see pages 47-48) to identify possible hazards and mitigation strategies; and
- The survey team will consider and plan for possible weather constraints associated with the project and address with BPA's COTR and/or CO.

Equipment

The following standard equipment is stocked for field crew use in each survey vehicle:

- 4x4 truck with topper and equipment racks;
- cell phones (issued to all survey party chiefs for communication, photos);
- scientific calculator;
- total station;
- survey grade GNSS system and RTK Radio;
- (1) automatic level;
- (1) level rod;
- (3) survey prism poles;
- (3) prisms;
- (3) two-way radios;
- (3) tri-brackets;
- (3) sets of survey tripod legs;
- first-aid kit;
- recreation grade GPS unit and state Gazetteers;
- SPOT locator;
- metal detector;
- sanvik (for brush clearing);
- whiskers, nails, flagging, wood stakes, lath, etc.;
- #5 rebar (various lengths);
- 2" aluminum control caps with stamp set;
- hand tools standard to field surveying including hammers and post pounder;
- fire prevention supplies: fire extinguisher, shovel, Pulaski, 5-gallon bucket, water sprayer;
- DOT/OSHA-approved safety equipment including high visibility vests, road signs, hazard beacons, hard hats, safety glasses, ear plugs, chaps, and gloves;
- tire chains;
- tool kit and jumper cables;
- come-along winch and tow rope or chain; and
- field notebooks, pencils, compass.

In addition, crews typically take a field data collector with Trimble Access. However, because of data processing in the office and security, these collectors are not stored in the trucks.

All of the software packages, as identified in the Contactor Furnished Property table on page 8, are available to our office staff as needed for all tasks.

Labor Classes

Upon receipt of a project from BPA, the contract manager will assign a survey manager and project surveyor to perform the work. These personnel selections will be based on the individual's experience with the type of work being performed and availability. If necessary, adjustments to existing workloads will be made to prioritize BPA work.

When assigning field personnel to projects, we first gain an understanding of the types of challenges associated with the project (see "General Approach to Methods"). We then seek to assign personnel based on relevant technical, logistical, and geographical experience and cost-effectiveness. For example, if we were given a project today that required topographic surveying on a large site for new facilities such as a substation (Project Type B), we might select Jeff Cyr as the project surveyor and John Shirey as our survey party chief. Both of these individuals have expertise in this category of work and recent experience at the Mill Creek Generation Station in Anaconda, Montana. We ensure our project team is well suited to the demands of the job.

We typically seek to pair the survey party chief with the most cost-effective personnel that are well qualified to support the project. Depending upon the nature of the project, additional personnel, including assistant survey party chiefs, survey technicians and/or survey aids will be used. We are experienced in effectively training new personnel (usually seasonal hires, including college students studying surveying or engineering) and do so by assigning them to projects with experienced leaders and thereby maximize cost-effectiveness for our clients. In fact, many of our current survey crew chiefs, including Jason Holler and Joe Cone, originally started at DJ&A with no experience in surveying. Now, after 10+ years of experience, they are tasked with training our new seasonal hires with the hopes that a few of them will take a strong interest in surveying and pursue it as a career. Depending on the nature of the project, we evaluate the feasibility of both single-person (survey party chief) and two-person crews (survey party chief plus survey aid) in terms of cost-effectiveness, safety, and benefits of developing junior surveyors.

We follow a similar methodology when assigning office technicians to projects. The majority of our office technicians are skilled in Microstation V8i and In-roads V8i and are capable of generating maps and surveys using this software. Kurt Luebke, Bob Rinfret, Dana Thorn, Mark Lehman, John Harwood and Shane Harwood recently completed training in MicroStation Basics, InRoads Survey Fundamentals and OpenRoads Survey Technology. When assigned to a project, our office technicians work closely with the survey manager and project surveyor to ensure that work has been completed in accordance with the task order scope of work and without errors.

Regardless of the application, we always try to match the strengths of our staff to the projects that we have been assigned. With so many experienced and qualified individuals working for DJ&A, we typically have multiple options.

We also make it a priority to stay consistent with personnel assignments when working for a specific client and at specific locations. Being familiar with BPA-specific demands will allow our staff to be more efficient resulting in cost savings to BPA.

Task-Specific Approaches

The following are the task-specific approaches to methods, equipment and labor classes for each of the 10 tasks listed in the solicitation.

Task #1: Boundary and Topographic Survey for an expansion of an existing BPA substation on to an adjacent heavily wooded BPA fee owned parcel that is not physically delineated and monumented

Methods: We have significant relevant experience in this type of task primarily because of the extensive topographic and boundary work that we have completed for NorthWestern Energy (formerly Montana Power Company and PPL Montana), the US Bureau of Reclamation and the US Forest Service. As noted on page 44, we have held IDIQ contracts with these two agencies since 2002 and 1998 respectively.

Prior to performing such surveys, our survey team will conduct records and document research and site location evaluations for ownership information of the parcel and surrounding parcels through federal, state and county (local) websites and BPA's database. Other information, such as nearby section corners and existing easements, will need to be identified and researched. Prominent topographic and planimetric features of the site may be identified from aerial photographs and other available imagery and maps to assist the field crew(s) with their planning efforts.

Equipment: When crews are working in heavily wooded areas, such as the expansion of utility parcels at Fort Peck within the "Pines" cabin sites for the US Army Corps of Engineers, we equipped them with our Trimble GNSS equipment (currently R8's and R10's) in addition to their standard total station (reflectorless and/or fully robotic). The R10 system has Expanded Trimble xFill functionality that allows surveyors to continue collecting data with centimeter accuracy indefinitely after connection is lost with their base station or VRS network. When working in such areas, we equip our crews with chainsaws and other cutting tools that may be necessary to clear downed trees across access roads and to perform minor brush clearing to obtain the necessary data.

Labor Class: With our in-house state-of-the-art equipment (e.g. GNSS receivers, fully robotic total stations, and C10 and P40 terrestrial laser scanners), our survey team has the flexibility to reduce the size of crew necessary to conduct surveys in a heavily wooded site.

Task #2: Stake transmission structures for construction

Methods: Construction staking accounts for a significant portion of our work. One such project, the Rainbow Dam Redevelopment Project for PPL Generation, is highlighted on the resumes of several key personnel. This project included the structure staking for 10 miles of transmission lines.

When tasked with any construction-staking project, including those for transmission structures, we begin with reviewing the construction plans and specifications to identify staking tolerances and ensure that the necessary information has been provided. Throughout the project we strive to maintain close coordination with both the contractor and the owner's representative overseeing the construction. We discuss preferred staking methods, schedule, staking notes, and the format of the information written on the stakes. Often times we will prepare exhibits showing exactly where stakes and reference points were placed relative to the item being constructed to increase quality of communication between the surveyor and the contractor.

Equipment: If a single-person crew is assigned to perform the work, we supplement their standard equipment with a robotic total station and RTK GPS.

Labor Class: We would typically use two-person crews including a survey party chief and a survey aid to provide the most cost-effective service for the client. When a project is sufficiently complex, we assign a qualified member of our staff to assist with reviewing the plans and preparing and checking construction-staking work prior to the contractor beginning construction activities based on our field stakes.

Task #3: Staking for earthwork to address an impairment to a transmission line.

Methods: When staking for earthwork in this context, also completed as part of the previously referenced PPL Generation project, a similar approach is taken to that of staking transmission structures.

Slope stakes must "catch" or be adjusted to match the existing ground surface. Information written on slope stakes is recorded in our field notes and checked upon returning to the office. When calculating earthwork volume, we compare an as-built surface to the existing ground surface prior to construction. The existing ground surface is usually provided by the owner, but, if it does not exist, we can easily collect ground surface data prior to construction.

Equipment: If we are performing earthwork volume calculations, we often use terrestrial HD laser scanning equipment. We are now operating a Leica P40 ScanStation that has the ability to capture millions of points in a 2-3 minute setup. Cross sections can also be used by collecting

data through conventional survey equipment. We have a variety of types of equipment and trained personnel to use whatever combination of equipment is in the best interest of BPA.

Labor Class: When slope staking, it is typically most effective to have two-person crews (survey party chief and survey aid). If earthwork volumes are needed, each of our land survey office technicians has experience comparing two Digital Terrain Model (DTM) surfaces and calculating earthwork volumes.

Task #4: Preparing strip legal descriptions and narratives with exhibits from survey data, deeds and title reports

Methods: The Bozeman Gas Transmission Re-Route Surveys completed for NorthWestern Energy, as highlighted on several resumes, is an indication of our depth of experience in this task. As a part of this project, we prepared legal utility easement corridor strip descriptions and exhibits in support of rerouting high pressure gas transmission lines.

First, based on the task order scope of work, we may order title reports as required. Title reports may contain sensitive information that must be kept secure (to maintain a secure workplace, DJ&A hires a third party firm to perform an annual security audit to assess our compliance with the Federal Information Security Management Act of 2002 [FISMA]). We also research and identify federal, state, county and BPA records that may assist with the preparation of the legal description and/or exhibit. We will work closely with BPA to prepare documents in an approved format.

Equipment: No task-specific equipment.

Labor Class: We will assign a project surveyor that understands proper protocols for preparing strip legal descriptions. Our project surveyors also understand original Government Land Office (GLO) platting procedures to assist with the interpretation of GLO documents. When dealing with tribal lands, a Certified Federal Surveyor (CFedS) will be assigned to the project.

Task #5: Updating Plan and Profile maps from a basemap dgn file

Methods: As both an engineering and surveying firm, DJ&A is very familiar with the process of updating a plan and profile design after updating the DTM in a basemap .dgn file. Although room did not allow example projects to be highlighted in our resumes, two such projects are referenced here: 1) As part of an 80-mile gas transmission line that we completed for the Montana Power Company from Cut Bank to Helena we updated the plan and profile maps from a basemap file; and 2) As part of an 18-mile, low-volume road design (East Fork Otter Creek), we provided supplemental survey and updated the mapping which then changed the roadway plan and profile sheets. This was completed in Geopak Survey and MicroStation.

After updating or acquiring the new DTM represented in a basemap .dgn file, our technicians will use the file containing the horizontal and vertical alignments (.alg or .gpk file) and update the plan and profile accordingly.

Equipment: InRoads Survey and MicroStation will be used to update the DTM and generate the new plan and profile.

Labor Class: We will assign a land survey office technician with experience and training in InRoads to perform this work. When warranted, a member of our engineering staff will be asked to review the updates to the plan and profile to provide quality assurance.

Task #6: Establishing and evaluating horizontal and vertical Control

Methods: We recognize the importance of establishing good project horizontal and vertical control and complete this task on the majority of projects we complete. One such example project is the ground survey we completed for BPA in 2014 for 14 miles of the Rattlesnake-Garrison line between Rattlesnake substation and Clinton, Montana, as included on several resumes. On a typical project, where new control is needed, we will set control in locations and to the tolerances necessary to meet or exceed the project requirements. If the scope requires tight vertical control, we will provide closed loop differential levels. To establish and/or verify horizontal control, we will provide static GPS observation where possible and/or run closed-traverse circuits with total stations.

Equipment: With static GPS and total station traverses, we can ensure horizontal tolerances have been met. To solve for GPS vector positions, we use a combination of TBC and the Online Positioning User Service (OPUS), which helps us accurately adjust project horizontal and vertical control.

Labor Class: We will assign a project surveyor (Kurt Luebke or Bob Rinfret) that is NGS OPUS-Projects certified.

Task #7: Effectively integrate new, under experienced, and under trained employees into billable roles.

Methods: As indicated on the organizational chart on page 13, DJ&A hires survey aids, typically entry-level, on a seasonal basis. We understand these individuals typically have no experience or training, yet we will include such individuals whenever in the best interest of BPA to do so; we have an excellent record of providing the guidance and mentoring needed to use these individuals effectively. For example, on the BPA project from Rattlesnake to Clinton mentioned previously, we employed four survey aids that helped us deliver this project cost-effectively for BPA. One of these individuals, Amanda Armstrong, works with us full-time today and is now, three years later, one of our Drafter/CAD Operators and Survey Technicians, as shown on the organizational chart.

A longer-term example of DJ&A's ability to effectively train and integrate entry-level employees into billable roles is Jason Holler, who attended the University of Montana majoring in Geography. Jason was hired with two other employees in 2006, none of whom had any surveying experience. Each of them was assigned to work with various experienced survey party chiefs throughout the summer learning new skills on a variety of projects. We started them slowly by first having them perform simple tasks such as writing on lath, setting up legs, foresight/backsight setups, rodman duties (mapping breaklines, taking appropriate shots) and instructing them on safety and proper survey procedures. We progressively assigned them more complex duties such as setting up a GPS base, running a total station, importing files for use on a data collector, and assisting with project planning. Jason and one other employee came back the following year to serve as survey technicians, and, upon graduation, they both decided that surveying would be a rewarding career. Jason has continued to enhance his skills and has worked his way through the ranks at DJ&A and now serves as one of our most capable survey party chiefs. Several others at DJ&A began their engineering and surveying careers as entry-level survey aids indicating the commitment that DJ&A has to this philosophy. They include: Chris Anderson (President), Glenn Howard (Vice President – Surveying), Mike Jensen (Vice President – Engineering), Joe Cone (Survey Party Chief), Mike Schmid-Sommer (Survey Party Chief), Henry Moua (Survey Party Chief), Paul Druyvestein (Engineer), and John Harwood (Land Survey Office Technician).

Equipment: N/A
Labor Class: N/A

Task #8: Preparing Field Notes in support of digital data collection

Methods: We understand that our field notes are the only means available to check and support our digital data. Because of this, we emphasize neat handwriting, thorough note taking, and drawing sketches and diagrams of collected information as shown below. With a complete set of notes, the project surveyor or survey manager checks the field notes and initials and dates them to verify consistency with the raw data files.

Equipment: N/A

Labor Class: The survey crew chief will clarify person(s) responsible for field notes. Survey manager will assign a land survey office technician with experience and training in checking in raw field data, processing of the data and checking rod heights, instrument setup heights and coding against the field notes to ensure accuracy of the notes to the raw data. An example of DJ&A field notes are provided in Figure 1.

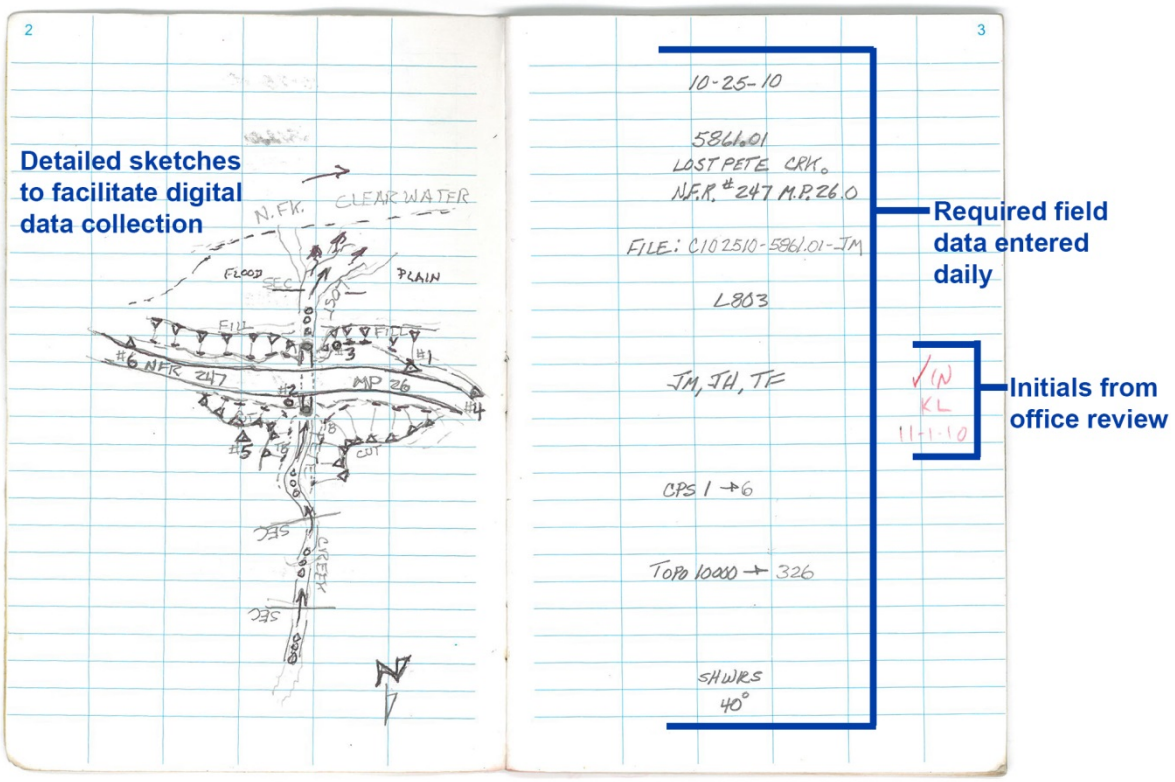

Figure 1. Example Field Notes

Task #9: Processing field data

Methods: After the raw survey data is downloaded and backed-up on our secure server, a series of quality control checks is performed by a land survey office technician. Control point checks, rod heights, instrument heights, red-flagged information as noted in the field books, and check shots are included in our initial quality control checks. All crews are required to check into existing control at the start of, end of, and, as available, throughout the workday. These checks verify the instrument or GPS base are still leveled and or sited properly, the GPS or prism rod has the proper height associated with it and the crew is still properly located on the coordinate system. All of these field checks are noted in the field books and then verified or checked against the processed data, as shown in Figure 1. Note the initials from Kurt Luebke ("KL") in Figure 1

regarding this check-in process. The individual performing the checks initials the pages of the field books as the checks are performed. If errors are found, the office technician often is able to correct the issue immediately. If coordination with the survey party chief is required, the office technician contacts the party chief to discuss and address the question or discrepancy. The project surveyor or survey manager then approves the quality control checks performed by the office technician. The processed data is imported into a seed .DGN file that contains the proper layers and settings to begin the type of project defined in the scope. Photographs and any other auxiliary data, such as scanned copies of field notes, are also downloaded, processed, and stored in the project file.

One recent project that highlights our ability to process large amounts of survey data from a remote location is the topographic survey that we completed for a transcanyon, water distribution pipeline (approximately eight miles) across the Grand Canyon. We sequenced the transmission of data and data processing such that nearly all of the data was processed before the crews completed their work in Arizona to ensure that we had not missed any required data collection.

Equipment: Trimble Business Center (TBC) is used to process and review field data. In-Roads Survey is used to manage the survey files and import points and other data into a .dgn seed file.

Labor Class: We assign a land survey office technician to process data and a project surveyor or survey manager to provide quality assurance of the processing and data checks. In some cases, we allow our survey party chiefs to provide initial processing and checks of the field data.

Task #10: Field verify airborne Lidar data horizontally and vertically along a 25-mile portion of transmission corridor

Methods: We have had many occasions to perform this task including on the projects associated with 1,200 miles of WAPA transmission lines, as detailed in the resumes of Joe Cone (Survey Party Chief) and others.

When providing verification of LiDAR data we initially coordinate with the aerial LiDAR company (subcontractor) to obtain their project requirements to meet the LiDAR acquisition specifications. Typically, if available, we look at the project site vegetation and terrain conditions using online tools such as Google Earth or aerial photographs from independent sources to assist us in determining where ground verification data is to be collected. We normally obtain random data within the mapping area under low, medium, and high vegetation conditions as well as hard surface areas. In a corridor with high variability in vegetation and terrain, more field verification may be necessary. We try to collect multiple cross sections in each of the vegetation types present on the project and steep sections. If the scope of work calls for a full topographic map, we collect survey data for items that the LiDAR does not register such as culverts, underground utilities, and planimetric features such as roads and trails. In corridors where water is present, we will run breaklines along the edge and ground shots through the water feature where LiDAR does not have accurate returns.

Equipment: We normally use GPS equipment for this data collection. However, in some locations and under certain project requirements we have also provided verification data on overhead conductor lines and transmission line structures using our Leica C10 and/or P40 ScanStation (terrestrial LiDAR) to supplement the aerial LiDAR survey.

Labor Class: Generally this work is completed by splitting up a two-person crew to allow for twice as much data collection.

(2) Technical/Management Proposal

3. Equipment

D&A, P.C.
since 1973

3. Equipment

Completed and submit a tabular equipment list (see attached Technical Proposal Excel Workbook, worksheet "Equipment") with your offer that will be utilized for this contract. List the brand(s) and the model number(s). List will be compared to the "Contractor Furnished Property" list in the provided Statement of Work. List should indicate the office location (City and State) and the quantity of each.

We have included all equipment-related information in the spreadsheet titled, "Item #5: Equipment" (see page 8). This table provides a listing of all licenses and equipment as requested. In addition, we have added the manufacturer names/model numbers as directed by Amendment 003, dated January 4, 2016. Finally, we have provided the total quantity of each type of contractor-furnished equipment for our team.

As can be seen, our team has all of the office and field equipment needed to safely and effectively deliver all survey services that can be anticipated under this contract. We are able to fully equip **seven** field crews and a compatible number of office support staff to provide the capacity needed to complete multiple large projects simultaneously. A picture of our fleet of survey vehicles appears below.

Note that all of our terrestrial and GPS survey equipment is compatible with the Trimble Access data collection software.



(2) Technical/Management Proposal

4. Location/Geographical Areas

4. Location/Geographical Areas

i. Address your ability to effectively and efficiently (both technically and cost) support Surveying and Mapping related tasks anywhere within BPA's service area. This can include all or parts of the following states: Washington, Oregon, Idaho, Montana, Wyoming, California, Utah, and Nevada.

Our team is experienced in and very effective at serving large geographical areas even when located far from our headquarters in Missoula. Such effectiveness is reflected by the numerous, multi-state, federal surveying contracts that we currently hold. All of our prime IDIQ contracts, including those that are for architecture and engineering (A/E) services, are summarized in the table below.

	Federal Agency	Years	Role	States Covered
Survey and Mapping	National Park Service, Intermountain Region	2014 - 2019	Prime	AZ, CO, **MT,** NM, OK, TX, **UT, WY**
	US Bureau of Reclamation, Pacific NW Region	2002 - 2017	Prime	**ID, MT**
	USACE, Omaha District	2014 - 2019	Prime	**ID, MT, OR, WA, WY**
	US Forest Service, Region 1	1998 - 2017	Prime	**ID, MT,** ND
Full-Service A/E with Survey and Mapping	NPS, Yellowstone, Glacier & Grand Teton	2014 - 2019	Prime	**ID, MT, WY**
	NPS, Intermountain Region	2011 - 2016	Prime	AZ, CO, **MT,** NM, OK, TX, **UT, WY**
	US Forest Service, Region 1	1989 - 2019	Prime	**ID, MT,** ND
	US Forest Service, Regions 6 & 10	2015 - 2020	Prime	AK, **OR, WA**
	Western Federal Lands Highway Division	2000 - 2010, 2015 - 2020	Prime	AK, **ID, MT, OR, WA, WY**

It is worth calling special attention to the Region 6 & 10 full-service A/E contract that we won in the spring of 2015 despite the fact that we are not located within the three-state region of Oregon, Washington and Alaska. We beat out 24 other firms who were based within the region because we were able to demonstrate the exceptional value we can provide even at project sites far from our main office.

Our survey crews have worked in all eight of the BPA territory states under one or more of these contracts and we have gained considerable experience in minimizing reimbursable travel expenses, even at distant sites, using several strategies including:

1) Establish remote office – In the case of a large project located outside of our immediate area, we would evaluate the feasibility of establishing a remote office. We have done so on several past projects including, most recently, when we established a field office in Glasgow, Montana to service a large survey project that we completed at Fort Peck Reservoir for the Corps of Engineers. The office was established in 2012, staffed with a

full-time local hire (PLS), and served as our base of operations until the project was completed in 2014. Such an office, located approximately 440 miles from our headquarters, allowed us to minimize reimbursable travel expenses.

2) Establish Extended Stays – Our crews work 10- to 20-day shifts at remote locations to minimize travel and per diem costs. For example, while surveying at Olympic National Park in western Washington, our crews worked 10-day shifts and while completing road surveying in Tununak Village, Alaska, our crews mobilized once for 20 days;

3) Strategic Lodging – Our crews stay as close to the base of operations as possible to minimize daily travel time; and

4) State-of-the-art Equipment – We have great equipment, including terrestrial LiDAR scanners, that minimizes the amount of time our crews spend in the field. Although not specifically addressed in the subject RFO, we have found the use of these LiDAR scanners to be very cost-effective for our clients particularly in areas with challenging terrain or sparsely vegetated expanses. Our company has over 9 years of experience with these scanners and we will use them whenever in the best interest of BPA.

Finally, it is worth noting, that we fully expect to open a regional office in the Portland area in the very near future to better serve BPA and other existing, large, federal clients, including Region 6 of the US Forest Service and Western Federal Lands Highway Division where much of our work is in Oregon and Washington. Securing this subject contract would serve to accelerate our plans for opening this office.

ii. Address your firm's regional offices that could be used to minimize reimbursable travel expenses. Complete and submit a tabular listing (see attached Technical Proposal Excel Workbook, worksheet entitled "Locations") of all survey and mapping support personnel that permanently reside at each office. The table should indicate their names and preferred labor classifications. <u>The labor classifications must match those listed in the Statement of Work provided with this RFO.</u> For personnel qualified to perform in the capacity of multiple labor classifications; indicate those additional classifications as well. In addition, indicate which individuals are competent, experienced users of the following:

The table titled, "Item #6: Location/Geographical Areas" was included previously (see page 9) and provides a listing of all survey and mapping support personnel along with their preferred labor classifications. The table also identifies the competent users of the following: MicroStation V8i; MicroStation Power In-roads V8i; Trimble Business Center (TBC); Trimble Access; and OPUS Projects. It is also worth mentioning, as noted above, that we have experience in opening remote offices to better service specific projects and we plan to open an office in the Portland area in the very near future.

(2) Technical/Management Proposal

5. Safety

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5. Safety

Provide a general safety plan that identifies any potential hazards that could be encountered during performance of work described in the Statement of Work. Describe how these hazards will be minimized or eliminated for contractor personnel or others and how the safety plan will be implemented. (Please do not provide your company's Safety Manual.)

Safety is our #1 priority as demonstrated throughout our company. For example, our survey crews have daily tailgate meetings, comparable to the "Job Briefing" meetings described in BPA's Accident Prevention Manual (APM), where they always address safety, including identifying hazards associated with the job, special precautions, and personal protective equipment. In addition, we have company-wide safety meetings/trainings, at 7:00 AM on the third Monday of every month, to ensure high levels of safety throughout our company. When our commitment to safety is combined with our 43 years of surveying experience working in remote and rugged terrain we get an incredibly safe surveying operation; we have not had a single reportable OSHA event across our entire company for more than five years.

In preparation for this proposal, we recently assembled various personnel from our company, including members of our safety committee, company president, survey party chiefs, survey managers, and office technicians to create a general safety plan customized to BPA and the scope of work identified in the subject RFO. Drawing on our collective experience on BPA and similar projects, we identified several potential hazards we would face on this contract and identified corresponding mitigation strategies. Based on this discussion we created the "BPA General Safety Checklist," which follows on the next two pages. We cross-referenced this checklist with BPA's most recent APM, dated March 31, 2015 to ensure it is comprehensive. Our checklist not only guides our operations under this contract but also displays our relevant knowledge of relevant safety issues, knowledge that only comes from experience.

Upon receipt of a work order from BPA, the contract manager, Chris Anderson, will ensure that the project surveyor meets with the Survey Party Chief(s) and completes the "BPA General Safety Checklist. Each potential hazard and mitigation strategy will be reviewed and documented during this meeting.

The project surveyor will send a copy of the completed checklist into the field with the Survey Party Chief. During daily tailgate meetings, the Survey Party Chief will review a minimum of three potential safety hazards from the prepared checklist (preferably the three most prevalent hazards) and their associated mitigation strategies. In addition, the survey crew will review other safety hazards encountered during the preceding workdays. We have found daily tailgate meetings to be an effective means of accident prevention while promoting a culture of safety at DJ&A. Note, as per equipment list, all personnel and vehicles are equipped with appropriate safety equipment. Further, there is a company-wide maintenance plan to ensure all equipment is regularly inspected and properly maintained.

BPA General Safety Checklist

Version 20160104

Project #	Project Name	Location	Project Start/End

Checklist to be reviewed by Project Surveyor and Survey Party Chief prior to mobilization. Hazards anticipated on subject project to be initialed and appropriate mitigation measures to be highlighted.

___ ___ Confined Spaces – Do not enter. EVER. EVER.

___ ___ Construction Equipment – Never park vehicles near equipment, make eye contact with operators, coordinate with contractor, give operators right of way, and be aware of surroundings at all times. Always park such that first movement is forward.

___ ___ Disgruntled Land Owners – Research private property and understand what clearances have been obtained, try to contact owners in advance to access property, always respect property owner's requests, never argue or escalate a volatile situation, walk away and call if confronted, be polite.

___ ___ Driving – Do not drive fatigued and share driving responsibilities. DJ&A policy prohibits the use of handheld devices. If you need to communicate on the telephone, have your co-pilot do the talking or use a hands-free device. Crews to wear seat belts at all times. Drive according to road conditions, obey traffic laws, exercise extreme caution on narrow rural roads, be aware of traffic (e.g. logging). Use headlights. Maintain appropriate speeds. Use hazard lights as needed. Do not travel when road conditions are not suitable. Ensure appropriate tires. Use chains as needed. Engage 4-wheel drive as needed.

___ ___ Electrical Lines – Be aware of your surroundings. Be mindful of overhead power lines and live wires. Identify specific power lines/power equipment that will be near your area of work and discuss ways to avoid them if possible. Review applicable minimum approach distances. Apply chains when warranted.

___ ___ Equipment-Specific
- Four-wheeler – Wear helmets, appropriate clothing, drive appropriate speeds, all users must have received proper training, engage emergency brake, use UTV where possible (roll bar), ensure sufficient fuel levels and extra gasoline.
- Chainsaw – Eye protection, helmet, hearing protection, face guard, chaps, steel-toe boots, spotter, proper training, chain break, ensure sharp chains, fire protection, store fuel in appropriate containers/locations, bar oil.
- Sanvik/Axe – Do not chop toward your body (legs), keep blade sharp, keep it tight, gloves, appropriate clothing, eye protection, hard hat, proper training.
- Hammer – Proper gloves, no loose heads, training, good handle, eye protection, hardhat.
- Pounder – Hardhat, gloves, eye protection, short strokes, hearing protection.

___ ___ Heavy Lifting – Use your legs, ask for help, look up, get a good grip, know your limits, do not over-exert, footwear, footing.

___ ___ Hunters – Consider location and season, wear high visibility clothing.

___ ___ Lightning – Watch for lightning, listen, seek shelter away from tall objects, wait 30 minutes after last strike of lighting is seen or thunder is heard.

___ ___ Poisonous Plants – Know plant species, wear proper clothing including gloves, AVOID (e.g. Poison Ivy).

___ ___ Radio Frequency Exposure – Field crews to maintain minimum safe working distance of 5 feet in all directions around structure-mounted transmitting antennas, as per R-4 of BPA's APM.

___ ___ Roadways – Use signs, high visibility equipment/vest, traffic cones, radios, and vehicle hazard flashers. Work as a team and yield right of way. Install tire chocks (steep terrain). Use terrestrial laser scanner when appropriate to avoid people/vehicle conflicts.

___ ___ Rock Fall – Be aware of surroundings, hard hats, park vehicles out of rock fall areas.

___ ___ Steep Terrain – Wear appropriate footwear, be surefooted, use ropes and harnesses where necessary, and use hardhats. Use terrestrial laser scanner when appropriate.

___ ___ Superfund Sites (hazardous materials) – Ensure proper training (e.g. Hazwopper), PPE, hard hats, eye protection, knowledge of surroundings.

___ ___ Trenches – Adhere to OSHA standards; use trench boxes where necessary; AVOID trenches less than 3ft.

___ ___ Weather – Dress appropriately (heat, cold, rain, snow, ice, etc.). Stay hydrated, stay together, monitor each other (crew members), monitor local weather, plan accordingly, seek shelter or evacuate site if dangerous. Wear avalanche beacons if necessary.

___ ___ Wetlands/bogs, Water Crossings - AVOID if possible. Use proper footwear, waders, flotation device, walking staff, ropes if necessary.

___ ___ Wildfire – No driving or parking in high vegetation; no smoking in fire-prone conditions, fully extinguish butts; be aware of all fire and travel restrictions; ensure proper operation of spark arrestors; ensure ready access to fire extinguisher, water bucket, Pulaski, shovel, and backpack water container; restrict chainsaw to appropriate hours (e.g. morning only); monitor before leaving site.

___ ___ Wildlife – Carry bear spray, snake bite kit, insecticide, bee sting kit, etc. as appropriate. Adhere to food restrictions including use of closed containers. Avoid wildlife such as moose, bear, skunk, etc. Wear appropriate clothing to address for insects (e.g. mosquitos, gnats, flies, bees, ticks, etc.) and use bug repellent.

___ ___ Windfall – Look for hazardous trees, seek shelter in windy conditions, provide training on how to cut/remove.

___ ___ Other – _____ [Consider specific project requirements and location]
_____
_____.

___ ___ Other – _____ [Consider specific project requirements and location]
_____
_____.

_____ _____
Project Surveyor Signature Date

_____ _____
Survey Party Chief Signature Date

(2) Technical/Management Proposal

6. Quality Assurance (QA) and Control (QC)

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6. Quality Assurance (QA) and Control (QC)

Provide specific examples of measures that will be utilized to ensure both surveying and mapping tasks and deliverables are performed and prepared safely, accurately, efficiently, correctly, on schedule, within a market competitive estimated level of effort and consistent with Statements of Work requirements. Some of the tasks that should be addressed are as follows:

DJ&A has developed a robust QA/QC process that we apply consistently to each of our projects. We will first describe our general approach to all projects and then provide specific examples of measures we use as related to the tasks identified in the RFO.

General Approach

As a consulting firm, we know that the quality of our work is the ultimate reflection of our commitment to excellence. Our quality assurance plan caters to the strengths of our managers and employees, fits with our company culture and philosophy, and has produced outstanding results as indicated by the many federal agencies that have contracted with us (see list of IDIQ contracts on page 44). These agencies recognize the quality of our work and choose to partner with us to deliver their projects.

Accurately, Correctly – Our general quality assurance plan focuses on three primary tasks: 1. assign experienced and competent managers and surveyors to deliver our surveying and mapping services; 2. assign experienced, in-house, quality control managers to provide independent reviews of task order statement of work and project deliverable documents; and 3. document quality control reviews with appropriate checklists to ensure accountability. In other words, it all boils down to having knowledgeable and experienced people with the ability to collect and process data and thoroughly review each project using checklists and other accountability measures. These reviews are incorporated into project scopes, schedules, and budgets so they are integral to every project from inception to project closeout.

On an annual basis, each of our total station instruments is placed on an NGS-calibrated baseline to check and verify the accuracy of each instrument. There are numerous other specific examples of measures described below that help to ensure that work is accurate and correct.

Efficient, Market Competitive, Consistent with SOW – Before beginning a task order, project cost estimates are prepared and reviewed by the survey manager and project manager to ensure costs are consistent with the project level of effort required. Managers will identify and define the project approach that will maximize staff efficiencies while at the same time maintaining the integrity of the statement of work.

The QA/QC process itself is simple and efficient and therefore contribute to our overall effort to be cost-effective. The checklists mentioned above are applicable to all projects in our company. There are five categories included on the checklist: 1) Completeness (where deliverables are checked for consistency with SOW); 2) Accuracy; 3) Conformance to applicable codes and standards; 4) Appearance/Presentation; and 5) Completeness of Records. The checklist is simple and therefore efficient and relies on the depth of experience of those providing quality control reviews. The simplicity of the QA process coupled with the depth of experience of those implementing the process results in efficient work processes and therefore highly cost-effective services.

On Schedule – The quality control reviews always take place prior to submittal deadlines. To ensure that all deadlines are met, adequate time to perform the necessary quality control reviews is included in each project schedule. Internally, we have a company-wide meeting every Monday morning where the primary topic of discussion is project deadlines and we allocated personnel to ensure that we meet all established project deadlines.

Safety – As referenced starting on page 46, we have a general safety plan. Our survey manager and project surveyor are ultimately responsible for the safety and project risk assessment quality assurance program for each specific task order. Project safety concerns and mitigation measures are addressed and documented up front at our internal project kickoff meeting prior to starting field surveying operations. Our field crews are required to hold daily tailgate safety meetings while on the project site, documenting these meetings and safety discussion points in the field survey notebook at the start of each day's work. This field survey notebook documentation is verified by DJ&A' s office staff with data entry and processing and reviewed by the project surveyor as a final (QA) process to ensure project safety concerns are being addressed properly. Working in a safe environment is of utmost importance at DJ&A. Work site safety is our highest project priority issue, and we make adjustments as needed throughout the project duration to maintain the safety of our employees. In addition, our company president (and contract manager) ensures and documents that company-wide safety meetings/trainings are held on a monthly basis (3rd Monday of each month).

In addition to the general approach to QA/QC on all survey task orders that is described above, we have identified specific quality control measures that we implement on the nine tasks identified in the RFO.

Task-Specific Approach

1. Static, RTK, RTN and Differential GPS use;
    a. Conduct redundant measurements (check shots) on existing control.
    b. When using RTK mode, reinitialize receivers on control occupation checks.
    c. Verify antenna height measurements (HI measurements metric and English)
    d. Use GPS observation booklet to record data at setup and take down
    e. Observe GPS health
    f. See field processing data (check-in process)
    g. Party chief and instrument operator check each other
    h. Conduct OPUS-solution control checks (back in office)

2. Staking Structures for construction;
    a. Check horizontal and vertical control to verify accuracy prior to staking.
    b. Review and check plans electronically. Check for omissions, discrepancies or conflicts.
    c. Compare field staking notes against drawings
    d. Pull tape to check structure corner diagonals and/or defined measurement calls.
    e. Provide detailed data tracking
    f. Work with contractor and client to ensure we are using latest contract documents and plans prior to staking, when design process is on going.

3. Earthwork staking;
    a. Check horizontal and vertical control to verify accuracy prior to staking.
    b. Review and check plans electronically. Check for omissions, discrepancies or conflicts.
    c. Compare field staking notes against drawings
    d. Use buddy system for safety. Make eye contact with equipment operators (include in safety section).
    e. Provide detailed data tracking
    f. Work with contractor and client to ensure we are using latest contract documents and plans prior to staking, when design process is on going.
    g. Conduct redundant volumetric calculations (and independent calculation checks by a second qualified person in-house).

4. Topographic Surveying;
    a. Control checks or placing a control
    b. Check electronic vs. field notes
    c. Check rod height (measured vs. noted)
    d. Ensure extent of area has been met (requested vs. performed)
    e. Make sure we are on correct datum (review SOW and what we've processed)
    f. Ensure we have proper seed file

g. Conduct hard copy visual of paper map (review for blunders, errors, proper procedures, bad contour line)

5. Boundary Surveying;
    a. Control checks or placing a control
    b. Check electronic vs. field notes
    c. Ensure extent of area has been met (requested vs. performed)
    d. Make sure we are on correct datum (review SOW and what we've processed)
    e. Ensure we have proper seed file
    f. Conduct hard copy visual of paper map (review for blunders, errors, proper procedures)
    g. Check against record documents (ensure we have all record docs, see title report)
    h. Instrument calibration (we keep a report and check calibration)
    i. Review map closure errors

6. Preparing legal descriptions with exhibits from provided deeds and title reports;
    a. Review title report to ensure we have all needed record documents - Enhance this by performing online & on-site research. For Rattlesnake-Garrison survey, in addition to supplied documents we completed independent research of county records
    b. Perform internal QA process – one person prepares, independent person reviews

7. Creation of new, and updates to, Plan and Profile maps;
    a. Perform internal QA process – one person prepares, independent person reviews
    b. Check against record Plan and Profile

8. Establishing and verifying horizontal and vertical project Control;
    a. Conduct tolerance checks, closed loop differential levels as needed, survey ties to existing control, update of control database found in the project control spreadsheet. Close within tolerance and then adjust traverse based on the closure error. Conduct static observation where possible (GPS). Reference OPUS Projects to accurately adjust project horizontal and vertical control
    b. Conduct redundant measurements (check shots) on existing control
    c. Reinitialize receivers on every occupation RTK
    d. Conduct dual unit measurements (HI measurements metric and English)
    e. Use GPS observation booklet to record data at setup and take down
    f. Observe GPS health
    g. Party chief and instrument operator to check each other
    h. Conduct OPUS-solution control checks (back in office)

9. Preparing progress reports.
    a. 2nd party, typically survey manager, to conduct 3rd party review prior to sending

(2) Technical/Management Proposal

7. Past Performance

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7. Past Performance

Provide three (3) most recent client references for similar projects, preferably with utility or government clients. Corporate clients are acceptable. Please provide company name, contact name, current email and phone number, along with a synopsis of the projects associated with the reference.

Reference #1

Company Name: Bonneville Power Administration

Contact Name: Rick Teiper

Current Email: r1tar1ck@frontier.com

Current Phone Number: 503-640-1007

Current Position: Land Surveyor (Retired)

Synopsis of Associated Projects:

Mr. Teiper was one of DJ&A's primary contacts with BPA and was closely involved with oversight and review of DJ&A's right of way (ROW) survey on BPA's Rattlesnake – Garrison No. 1 (230 kV line) between Missoula, Mt. and Clinton, Mt. (approximately 14 miles of line) in 2013 and 2014. DJ&A was tasked with: 1) conducting a retracement survey over the full length of the transmission line ROW; 2) analyzing existing record documents identifying BPA's land rights over the full length of the transmission line ROW; 3) setting BPA monuments at angle points and at point on tangents (POT) along the acquisition line; 4) post and marking (with BPA posts & signs) the ROW line; and 5) cadastral and property corner surveys in support of preparing and filing a Certificate of Survey with the county Clerk and Recorder of the transmission line ROW survey.

Reference #2

Company Name: Northwestern Energy

Contact Name: Mark Mullowney

Current Email: marc.mullowney@northwestern.com

Current Phone Number: (406) 497-2285

Current Position: Director, Gas Transmission and Storage at NorthWestern Energy

Synopsis of Projects:

Mr. Mullowney has the ultimate responsibility for gas-transmission projects at NorthWestern Energy (NWE), the biggest utility in Montana. DJ&A has provided NWE with survey, mapping and engineering services since the 1990's. Marc has had direct project oversight over and/or intimate knowledge of all of DJ&A's wide variety of services including: 1) hundreds of miles of utility line route surveys; 2) overhead transmission line surveys (many using terrestrial laser scanner); 3) utility line ROW surveys; 4) electrical substation, gas compressor and valve station site surveys; 5) cadastral and property boundary surveys; 6) utility easement surveys and exhibits; 7) plan and profile drawing sheet updates and 8) utility line construction staking surveys.

Reference #3

Company Name: U.S. Department of the Interior – Bureau of Reclamation

Contact Name: Joe Pratt

Current Email: jpratt@usbr.gov

Current Phone Number: (208) 378-5139

Current Position: Contracting Officer

Synopsis of Projects:

From 2002 through the present, Mr. Pratt has been the Contracting Officer for DJ&A's surveying and mapping contract with the US Bureau of Reclamation (USBR) Pacific Northwest Region and has first-hand knowledge of all of projects DJ&A has performed under this contract. Our services have included: 1) overhead transmission line and substation utility survey and mapping; 2) high order GPS control surveys; 3) corridor topographic and planimetric mapping surveys; 4) project construction staking support services; 5) aerial photography and aerial LiDAR mapping surveys; 6) cadastral, property boundary surveys over multiple sections of land; 7) records and document research and the preparation of and filing of Record of Survey; 8) detailed structure site surveys; 9) bathymetric water surveys; and 10) cad and GIS mapping support services.

8. Subcontracting Plan

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8. Subcontracting Plan

Provide an estimated dollar amount or percentage of work that may be awarded to subcontractors who are one of the supplier diversity program categories, or (2) a statement, with supporting reasons, that the nature of the contract does not offer subcontracting possibilities; state which disciplines would be performed in-house by your company and which may be assigned to subcontractors, if any. Identify qualifications of all subcontractors proposed, company name and key personnel. (Note: A detailed Subcontracting Plan may be required at time of award if applicable.

DJ&A is a qualified small business concern as identified by the U.S. Small Business Administration list for NAICS code 541370 that establishes the size standard for geophysical surveying and mapping services as $15M. As such, it appears that the subcontracting plan requirements are not applicable to our team, as per SUBCONTRACTING PLAN REQUIREMENT (8-4) on page 6 of Attachment 1 of the RFO.

Nonetheless, we have included information on our subcontractors to provide a complete picture of the qualified subconsultants and personnel that we are including on our team.

DJ&A has the ability, capacity and equipment in-house to provide every type of surveying and mapping service identified in the subject RFO. However, it is unclear whether aerial LiDAR services will be required. In an effort to make sure we can meet all the needs of BPA under this contract we have added two subcontractors to our team that provide aerial LiDAR services and with whom we have long-standing working relationships.

As noted on our organizational chart, our subcontractors are Merrick & Company (Denver-based) and Quantum Spatial (Portland-based). We have significant work history with both companies (Merrick since the late 1990's and with Quantum Spatial, including its predecessors, for over a decade) and therefore are very confident in their abilities and levels of service. We would subcontract with whichever company provides better value to BPA on a particular project with the primary consideration being project location with respect to each company. Resumes have been included for the survey manager from each company and show the depth of experience these individuals and companies have. Additional information is provided below:

Company Name: Merrick & Company
Primary Function: Provide aerial LiDAR services
Key Personnel: Brian Holzworth, GISP (see resume)
Location: Denver, Colorado

Company Name: Quantum Spacial
Primary Function: Provide aerial LiDAR services
Key Personnel: Ian Berdie, PMP (see resume)
Location: Portland, Oregon

Appendix

Amendments

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RFO 3553 AMENDMENT 001
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 11, 2015

The purpose of this modification is to revise the Instruction to Offerors, Attachment 001 and incorporate submitted contractor clarification questions and BPA responses.

A. Revise Instruction to Offerors, Submission of Offers as follows:

All offers shall be sent via email by January 4, 2016, no later than 3:00 PM to Kristi Carter at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov. No communication is authorized between the contractor and Bonneville Power representatives or employees other than the Contracting Officer's Representative, Tracey Albright, and the Contracting Officer's Assistant, Kristi Carter. Clarification questions may be submitted via email to Kristi Cater at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov no later than December 21, 2015, 3:00 p.m. PDT. Answers to clarification questions will be posted as an amendment to the solicitation via email to all potential offerors. If you decide not to submit an offer, it is requested that you contact Kristi Carter and Tracey Albright.

B. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 8 SUBCONTRACTING PLAN, as follows:

Provide an estimated dollar amount or percentage of work that may be awarded to subcontractors who are one of the supplier diversity program categories, or (2) a statement, with supporting reasons, that the nature of the contract does not offer subcontracting possibilities; state which disciplines would be performed in-house by your company and which may be assigned to subcontractors, if any. Identify qualifications of all subcontractors proposed, company name and key personnel. (Note: A detailed Subcontracting Plan may be required at time of award if applicable.

C. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 4 PAST PERFORMANCE A, as follows:

BPA focuses on information that demonstrates quality of performance relative to the complexity of the procurement under consideration. The offeror's references will assist BPA in collecting this information. References other than those identified by the offeror may be used by BPA. All such information may be used in the evaluation of the offeror's past performance.

D. Incorporate the following submitted contractor clarification questions, and BPA responses.

CONTRACTOR QUESTION #1: The subcontracting information on Attachment 1, page 6 appears to conflict with the instructions on Attachment 1, page 5: (page 6), please advise of the requirement.

BPA RESPONSE: See Item B in Amendment 001.

CONTRACTOR QUESTION #2: Attachment 1, page 5, item (4) Past Performance – requires the use of the "attached" Past Performance Reference Form. However, the form is not attached. Could you direct me to the correct form?

BPA RESPONSE: Refer to Item C in Amendment 001.

CONTRACTOR QUESTION #3: Is it permitted to use BPA projects and references/personnel on the Past Performance section/form? Or should all of the Past Performance project be from non-BPA clients?

BPA RESPONSE: BPA references are acceptable.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name	DJ&A, P.C.
Signature (by person authorized to sign):	(b) (6) [redacted]
Date signed:	1-15-2016

RFO 3553 AMENDMENT 002
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 30, 2015

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. The offer due date has been extended to January 11, 2016 at 3:00 PM.

B. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: Under Professional Qualifications – Item 1 references the person in responsible charge but also references the resumes of key personnel and states recent projects that they have overseen. Does this include Project Managers and Project Surveyors only or does it also include other key personnel that have managed key portions of a project?

BPA RESPONSE: Yes, Key Personnel are those individuals filling positions that oversee the whole project and/or specialized tasks of the project: Survey Managers, Project Surveyors, PLS's/RLS's, Survey Party Chiefs, and Land Survey Office Technicians.

CONTRACTOR QUESTION #2: Are examples of past projects desired or not?

BPA RESPONSE: Yes, the resumes should refer to past projects to address size, scope, and responsibilities and convey the Key individual's experience.

CONTRACTOR QUESTION #3: Does BPA have a preference of the type of electronic files (PDF, Word, etc) to be submitted? Is there a limit to file size?

BPA RESPONSE: The vendor can submit their responses to the RFO in either a PDF or Word format. The RFO 3553 Business Workbook and Technical Workbook shall be submitted in both the native Excel format and a PDF copy. The BPA email system has a limit of 10 mb's.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name DJ&A, P.C.
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 1-15-2016

RFO 3553 AMENDMENT 003
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 4, 2016

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. The offer due date has been extended to <u>January 18, 2016 at 3:00 PM.</u>

B. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: Are we to add specialized equipment rates – i.e., ATV's, boats, UAV's, scanners, etc. – to the Business Workbook or leave them out altogether?

BPA RESPONSE: ATV's are a common specialized equipment that are regularly required to perform BPA work and can be added to the Business Workbook spreadsheet. All other specialized equipment will be priced out on an as needed basis at the time of a contract release or work assignment.

CONTRACTOR QUESTION #2: Is the selection panel the same for the RFO solicitation as it was for the SOQ solicitation?

BPA RESPONSE: The evaluation team is the same for the RFO as was for the RFQ, but the selection by the Contracting Officer, or Contracting Office, is based on evaluation team recommendations.

CONTRACTOR QUESTION #3: Can we add the requested equipment brand names and model numbers to the provided spreadsheet or would you like a separate spreadsheet with this information?

BPA RESPONSE: Yes, manufacture names and model names/models can be included in the Technical Workbook / Equipment worksheet for survey field equipment.

CONTRACTOR QUESTION #4: Please clarify under Technical Approach bullet one, is an "existing heavily wooded Substation Parcel" an existing substation to be expanded or just and existing parcel for a new substation?

BPA RESPONSE: This task should be interpreted as a Boundary and Topographic Survey for an expansion of an existing BPA substation on to an adjacent heavily wooded BPA fee owned parcel that is not physically delineated and monumented.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name DJ&A, P.C.
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 1-15-2016

RFO 3553 AMENDMENT 004
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 12, 2016

The purpose of this amendment is to incorporate a submitted contractor clarification question and BPA's response.

A. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: We anticipate that allowing more than one pricing sheet will provide positive pricing for BPA by using subcontractors that are closer to work in some of your service areas. Will BPA accept different pricing workbooks, to reflect ours and our subs information, or do we need to develop one set of rates that will work for our entire team (prime and subcontractors)?

BPA RESPONSE: Vendors should only submit what has been requested in the "Instruction to Offerors" section of RFO 3553, but we can accept the submittal of additional Technical and Business Workbooks for subcontractors/partners. Each Prime Vendor must still have meet the Personnel requirements set out in the RFO without including subcontracting staff.

At a minimum, a core team comprised of the following personnel is to be available for BPA projects.

- Three Professional/Registered Land Surveyors licensed in one of the primary states within BPA's service area (Montana, Oregon, Idaho, & Washington) to act in a project surveyor and/or professional capacity. Each core team having licensees/registrants in two states within BPA's primary service area: Montana, Oregon, Idaho, & Washington.

- Two survey field crews; a two-person and a three person crew that can also act in the capacity of an office resource in assisting the PLS/RLS in research and processing/adjusting survey field data.

- Three survey office technicians for processing field data, creating reports, and CAD survey mapping duties; creating/updating survey and plan/profile maps.

- One staff member that is NGS OPUS-Projects certified.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: DJ&A, P.C.
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 1-15-2016

TECHNICAL/MANAGEMENT PROPOSAL
ITEM #5: EQUIPMENT

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	µ V8i license	µ V8i In-Roads license	TBC current licenses	Data Collectors with Trimble Access	GPS RTK receiver pair	3" Total Station with long range reflectorless	Trimble GPS RTN receivers	Trimble GPS Static receivers
Missoula, MT	*4*	*3*	*6*	*8*	*8*	*8*	*14*	*18*
Brands/Model Number	N/A	N/A	N/A	Trimble TSC3 (4) Trimble TSC2 (4)	Trimble R8 (4) Trimble R10 (2) Trimble 5800 (2)	Trimble S5 Trimble 5603 Leica TCRA 1201 Leica TS09 Leica TS06 (2) Leica TCR703 Leica TCR803	R10 - (4), R8 - (8), 5800 - (2)	R10 - (4), R8 - (8), 5800 - (2), 5700 - (1), 4700 - (3)

CONTRACTOR-FURNISHED PROPERTY

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	Four-Wheel Drive, Cell Phone Equipped Vehicles	Tire Chains	Total Stations (including reflectorless technology)	Field Data Collectors w/Trimble Access Software *(licenses current)*	Current Hardware/ Software Maintenance Agreements	Leica Levels *(4-digital, 7-auto)*	Multiple Dual Frequency Geodetic-Grade GPS Systems w/Static & Rapid static	Multiple Dual Frequency RTN/VRS GPS Receivers
Missoula, MT	*14*	*14*	*11*	*22*	*15*	*11*	*18*	*14*

CONTRACTOR-FURNISHED PROPERTY CONTINUED

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	GPS RTN/VRS subscriptions OR/WA (active OR account - WA account to be activated when needed)	Multiple Dual Frequency RTK Systems	Multiple Trimble Resource-Grade GPS System with post-processed sub meter accuracies	Scientific Calculators	Magnetic Locators	Two-Way Radios	Chainsaws	Digital Cameras
Missoula, MT	*1*	14	*5*	*23*	*8*	*16*	*6*	*23*

CONTRACTOR-FURNISHED PROPERTY

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)		
	DOT/OSHA-Approved Safety Equipment	Hand Tools Standard to Field Surveying	Computers & Related Software to Support Field Surveying Personnel and Equipment
Missoula, MT	*14*	*32*	23

CONTRACTOR-FURNISHED SOFTWARE

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)							
	Bentley MicroStation V8i CAD Platform	Bentley Software 3 - Power InRoads, 1 - Descartes V8i	Current Trimble Business Center Software Current licenses v3.1 = 3, v3.4 = 3	ESRI ArcMap Software Current licenses (version 10.2)	Trimble Pathfinder Office (will update license as soon as needed)	Programs Supporting ESRI-Compatible File Formats (e.g. Civil 3D, Microstation, TBC, Global Mapper, ArcMap and more)	PLS-CADD Software Licenses to support LiDAR Data Analysis	OPUS Projects Certified Users
Missoula, MT	*4*	*4*	*6*	*3*	*1*	*12+*	*0*	*2*
Denver, CO	N/A	N/A	N/A	N/A	N/A	N/A	*2*	N/A
Portland, OR	N/A	N/A	N/A	N/A	N/A	N/A	*21*	N/A

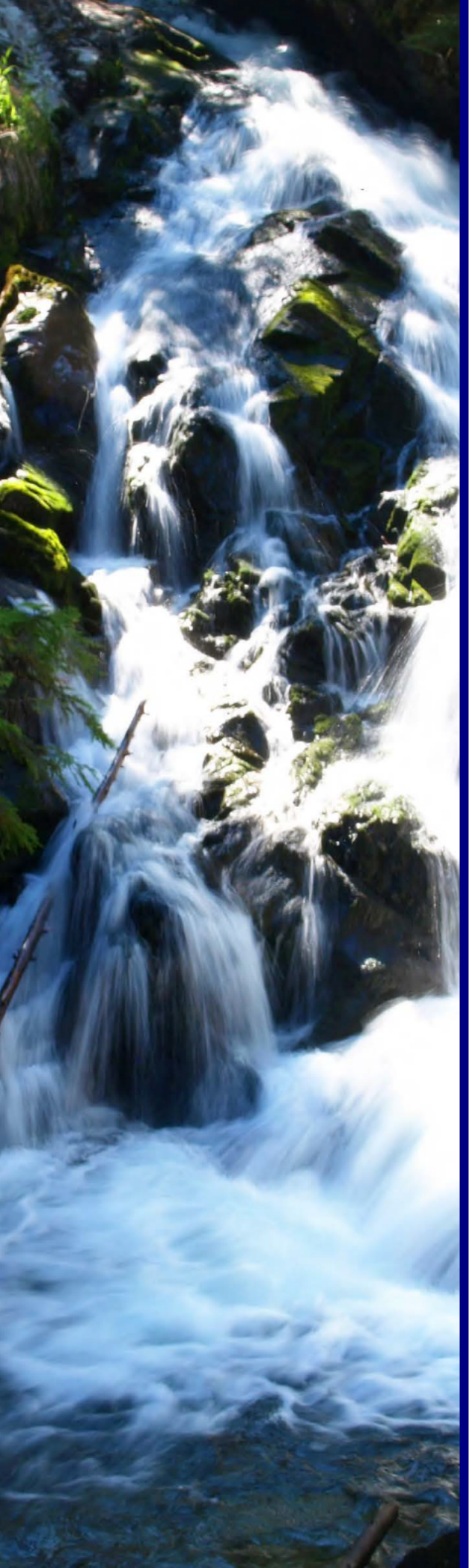
TECHNICAL/MANAGEMENT PROPOSAL

ITEM #6: LOCATION/GEOGRAPHICAL AREAS

NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASS. PER SOW	ALT. LABOR PER SOW CLASS	COMPETENT USER OF OF THE FOLLOWING: (1.V8i, 2.V8i In-Roads, 3.TBC, 4.Trimble Access, 5. OPUS Projects)
Chris Anderson, PE, LEED AP	Missoula, MT	Contract Manager (non-billable)	N/A	
Glenn Howard, PLS	Missoula, MT	Survey Manager	Project Surveyor	
Kurt Luebke, PLS, CFedS	Missoula, MT	Survey Manager	Project Surveyor	3, 4, 5
George Marshall, PLS	Missoula, MT	Survey Manager	Project Surveyor	1, 2, 3, 4
Bob Rinfret, PLS	Missoula, MT	Project Surveyor	Land Survey Office Technician	1, 2, 3, 4, 5
Jeff Cyr, PLS	Missoula, MT	Project Surveyor	Survey Party Chief	1, 2, 3, 4
John Harwood	Missoula, MT	Land Survey Office Technician	Drafter/CAD Operator II	1, 2
Mark Lehman	Missoula, MT	Drafter/CAD Operator II	Cartographic Technician	1, 2
Shane Harwood	Missoula, MT	Drafter/CAD Operator II	Survey Technician	4
Dana Thorn	Missoula, MT	Drafter/CAD Operator II	Survey Technician	3,4
Amanda Armstrong	Missoula, MT	Drafter/CAD Operator II	Survey Technician	
Ben Sundy	Missoula, MT	GIS Technician	N/A	
Andy Scalise	Missoula, MT	Cartographic Technician	GIS Technician	
John Shirey, LSI	Missoula, MT	Survey Party Chief	Survey Technician	4
Joe Cone	Missoula, MT	Survey Party Chief	Survey Technician	4
Jason Holler	Missoula, MT	Survey Party Chief	Survey Technician	3,4
Steve Cummings	Missoula, MT	Survey Party Chief	Survey Technician	4
Mike Schmid-Sommer	Missoula, MT	Survey Party Chief	Survey Technician	4
Jake Maier	Missoula, MT	Survey Party Chief	Survey Technician	4
Henry Moua	Missoula, MT	Survey Party Chief	Survey Technician	4
Mark Erickson	Missoula, MT	Survey Technician	Survey Aid	4
Dee Weaver	Missoula, MT	Survey Technician	Survey Aid	
Clay Armstrong	Missoula, MT	Survey Technician	Survey Aid	
Blake Norman	Missoula, MT	Survey Technician	Survey Aid	
Jenny Gray	Missoula, MT	Clerical/Administration		
Kelly Youbles	Missoula, MT	Clerical/Administration		
Brian Holzworth, GISP	Denver, CO	Survey Manager	GIS Analyst	
Joshua Nimetz, CMS	Denver, CO	Land Survey Office Technician	N/A	1
Bruce A. Adey, GISP	Denver, CO	GIS Analyst	Land Survey Office Technician	1,2
Ian Berdie, PMP	Portland, OR	Survey Manager	N/A	
Ryan Lynch	Portland, OR	Land Survey Office Technician	N/A	
Jamie Ludwig	Portland, OR	Land Survey Office Technician	N/A	

BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 43.50	$ 84.59	$ 15.37	$ 143.47	N/A	N/A	N/A	N/A
Project Surveyor	$ 33.83	$ 65.80	$ 11.96	$ 111.58	N/A	N/A	N/A	N/A
Survey Party Chief	$ 21.21	$ 41.26	$ 7.50	$ 69.97	$ 31.82	$ 49.64	$ 9.78	$ 91.24
Survey Technician	$ 17.75	$ 34.52	$ 6.27	$ 58.54	$ 26.63	$ 41.54	$ 8.18	$ 76.34
Survey Aid	$ 15.00	$ 29.17	$ 5.30	$ 49.47	$ 22.50	$ 35.10	$ 6.91	$ 64.51
Land Survey Office Technician	$ 24.50	$ 47.65	$ 8.66	$ 80.80	$ 36.75	$ 57.33	$ 11.29	$ 105.37
Drafter/CAD Operator II	$ 21.10	$ 41.03	$ 7.46	$ 69.59	$ 31.65	$ 49.37	$ 9.72	$ 90.75
Cartographic Technician	$ 21.67	$ 42.14	$ 7.66	$ 71.46	$ 32.50	$ 50.70	$ 9.98	$ 93.18
Clerical/Administration	$ 17.25	$ 33.55	$ 6.10	$ 56.89	$ 25.88	$ 40.37	$ 7.95	$ 74.19
GIS Technician	$ 19.00	$ 36.95	$ 6.71	$ 62.66	$ 28.50	$ 44.46	$ 8.76	$ 81.72
GIS Analyst	$ 22.00	$ 42.78	$ 7.77	$ 72.56	$ 33.00	$ 51.48	$ 10.14	$ 94.62
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 44.81	$ 87.13	$ 15.83	$ 147.77	N/A	N/A	N/A	N/A
Project Surveyor	$ 34.85	$ 67.77	$ 12.31	$ 114.93	N/A	N/A	N/A	N/A
Survey Party Chief	$ 21.85	$ 42.49	$ 7.72	$ 72.07	$ 32.78	$ 51.13	$ 10.07	$ 93.98
Survey Technician	$ 18.28	$ 35.55	$ 6.46	$ 60.30	$ 27.42	$ 42.78	$ 8.42	$ 78.63
Survey Aid	$ 15.45	$ 30.05	$ 5.46	$ 50.96	$ 23.18	$ 36.15	$ 7.12	$ 66.45
Land Survey Office Technician	$ 25.24	$ 49.07	$ 8.92	$ 83.23	$ 37.85	$ 59.05	$ 11.63	$ 108.53
Drafter/CAD Operator II	$ 21.73	$ 42.26	$ 7.68	$ 71.68	$ 32.60	$ 50.86	$ 10.01	$ 93.47
Cartographic Technician	$ 22.32	$ 43.40	$ 7.89	$ 73.60	$ 33.48	$ 52.22	$ 10.28	$ 95.98
Clerical/Administration	$ 17.77	$ 34.55	$ 6.28	$ 58.60	$ 26.65	$ 41.58	$ 8.19	$ 76.41
GIS Technician	$ 19.57	$ 38.06	$ 6.92	$ 64.54	$ 29.36	$ 45.79	$ 9.02	$ 84.17
GIS Analyst	$ 22.66	$ 44.07	$ 8.01	$ 74.73	$ 33.99	$ 53.02	$ 10.44	$ 97.46
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 46.15	$ 89.75	$ 16.31	$ 152.20	N/A	N/A	N/A	N/A
Project Surveyor	$ 35.89	$ 69.80	$ 12.68	$ 118.38	N/A	N/A	N/A	N/A
Survey Party Chief	$ 22.51	$ 43.77	$ 7.95	$ 74.23	$ 33.76	$ 52.66	$ 10.37	$ 96.79
Survey Technician	$ 18.83	$ 36.62	$ 6.65	$ 62.11	$ 28.25	$ 44.06	$ 8.68	$ 80.99
Survey Aid	$ 15.91	$ 30.95	$ 5.62	$ 52.48	$ 23.87	$ 37.24	$ 7.33	$ 68.44
Land Survey Office Technician	$ 25.99	$ 50.55	$ 9.18	$ 85.72	$ 38.99	$ 60.82	$ 11.98	$ 111.79
Drafter/CAD Operator II	$ 22.38	$ 43.53	$ 7.91	$ 73.83	$ 33.58	$ 52.38	$ 10.32	$ 96.27
Cartographic Technician	$ 22.99	$ 44.70	$ 8.12	$ 75.81	$ 34.48	$ 53.79	$ 10.59	$ 98.86
Clerical/Administration	$ 18.30	$ 35.59	$ 6.47	$ 60.36	$ 27.45	$ 42.82	$ 8.43	$ 78.71
GIS Technician	$ 20.16	$ 39.20	$ 7.12	$ 66.48	$ 30.24	$ 47.17	$ 9.29	$ 86.69
GIS Analyst	$ 23.34	$ 45.39	$ 8.25	$ 76.98	$ 35.01	$ 54.62	$ 10.75	$ 100.38
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 47.53	$ 92.44	$ 16.80	$ 156.77	N/A	N/A	N/A	N/A
Project Surveyor	$ 36.97	$ 71.90	$ 13.06	$ 121.93	N/A	N/A	N/A	N/A
Survey Party Chief	$ 23.18	$ 45.08	$ 8.19	$ 76.45	$ 34.77	$ 54.24	$ 10.68	$ 99.70
Survey Technician	$ 19.40	$ 37.72	$ 6.85	$ 63.97	$ 29.09	$ 45.39	$ 8.94	$ 83.42
Survey Aid	$ 16.39	$ 31.88	$ 5.79	$ 54.06	$ 24.59	$ 38.35	$ 7.55	$ 70.49
Land Survey Office Technician	$ 26.77	$ 52.06	$ 9.46	$ 88.30	$ 40.16	$ 62.65	$ 12.34	$ 115.14
Drafter/CAD Operator II	$ 23.06	$ 44.84	$ 8.15	$ 76.04	$ 34.58	$ 53.95	$ 10.62	$ 99.16
Cartographic Technician	$ 23.68	$ 46.04	$ 8.37	$ 78.08	$ 35.51	$ 55.40	$ 10.91	$ 101.82
Clerical/Administration	$ 18.85	$ 36.66	$ 6.66	$ 62.17	$ 28.27	$ 44.11	$ 8.69	$ 81.07
GIS Technician	$ 20.76	$ 40.38	$ 7.34	$ 68.47	$ 31.14	$ 48.58	$ 9.57	$ 89.29
GIS Analyst	$ 24.04	$ 46.75	$ 8.49	$ 79.29	$ 36.06	$ 56.25	$ 11.08	$ 103.39
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021								
Job Description	**Salary Base Rate**	**Overhead (194.47%)**	**Profit (12%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (1.56%)**	**OT Profit (12%)**	**OT Contract Billing Rate**
Survey Manager	$ 48.96	$ 95.21	$ 17.30	$ 161.47	N/A	N/A	N/A	N/A
Project Surveyor	$ 38.08	$ 74.05	$ 13.46	$ 125.59	N/A	N/A	N/A	N/A
Survey Party Chief	$ 23.88	$ 46.43	$ 8.44	$ 78.75	$ 35.82	$ 55.87	$ 11.00	$ 102.69
Survey Technician	$ 19.98	$ 38.85	$ 7.06	$ 65.89	$ 29.97	$ 46.75	$ 9.21	$ 85.92
Survey Aid	$ 16.88	$ 32.83	$ 5.97	$ 55.68	$ 25.32	$ 39.51	$ 7.78	$ 72.61
Land Survey Office Technician	$ 27.57	$ 53.63	$ 9.74	$ 90.94	$ 41.36	$ 64.53	$ 12.71	$ 118.59
Drafter/CAD Operator II	$ 23.75	$ 46.18	$ 8.39	$ 78.32	$ 35.62	$ 55.57	$ 10.94	$ 102.14
Cartographic Technician	$ 24.39	$ 47.42	$ 8.62	$ 80.43	$ 36.58	$ 57.06	$ 11.24	$ 104.88
Clerical/Administration	$ 19.42	$ 37.76	$ 6.86	$ 64.03	$ 29.12	$ 45.43	$ 8.95	$ 83.50
GIS Technician	$ 21.38	$ 41.59	$ 7.56	$ 70.53	$ 32.08	$ 50.04	$ 9.85	$ 91.97
GIS Analyst	$ 24.76	$ 48.15	$ 8.75	$ 81.66	$ 37.14	$ 57.94	$ 11.41	$ 106.49

LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017			
1	Survey Manager	$ 143.47	N/A
2	Project Surveyor	$ 111.58	N/A
3	Survey Party Chief	$ 69.97	$ 91.24
4	Survey Technician	$ 58.54	$ 76.34
5	Survey Aid	$ 49.47	$ 64.51
6	Land Survey Office Technician	$ 80.80	$ 105.37
7	Drafter/CAD Operator II	$ 69.59	$ 90.75
8	Cartographic Technician	$ 71.46	$ 93.18
9	Clerical/Administration	$ 56.89	$ 74.19
10	GIS Technician	$ 62.66	$ 81.72
11	GIS Analyst	$ 72.56	$ 94.62
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018			
12	Survey Manager	$ 147.77	N/A
13	Project Surveyor	$ 114.93	N/A
14	Survey Party Chief	$ 72.07	$ 93.98
15	Survey Technician	$ 60.30	$ 78.63
16	Survey Aid	$ 50.96	$ 66.45
17	Land Survey Office Technician	$ 83.23	$ 108.53
18	Drafter/CAD Operator II	$ 71.68	$ 93.47
19	Cartographic Technician	$ 73.60	$ 95.98
20	Clerical/Administration	$ 58.60	$ 76.41
21	GIS Technician	$ 64.54	$ 84.17
22	GIS Analyst	$ 74.73	$ 97.46
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019			
23	Survey Manager	$ 152.20	N/A
24	Project Surveyor	$ 118.38	N/A
25	Survey Party Chief	$ 74.23	$ 96.79
26	Survey Technician	$ 62.11	$ 80.99
24	Survey Aid	$ 52.48	$ 68.44
28	Land Survey Office Technician	$ 85.72	$ 111.79
29	Drafter/CAD Operator II	$ 73.83	$ 96.27
30	Cartographic Technician	$ 75.81	$ 98.86
31	Clerical/Administration	$ 60.36	$ 78.71
32	GIS Technician	$ 66.48	$ 86.69
33	GIS Analyst	$ 76.98	$ 100.38
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020			
34	Survey Manager	$ 156.77	N/A
35	Project Surveyor	$ 121.93	N/A
36	Survey Party Chief	$ 76.45	$ 99.70
37	Survey Technician	$ 63.97	$ 83.42
38	Survey Aid	$ 54.06	$ 70.49
39	Land Survey Office Technician	$ 88.30	$ 115.14
40	Drafter/CAD Operator II	$ 76.04	$ 99.16
41	Cartographic Technician	$ 78.08	$ 101.82
42	Clerical/Administration	$ 62.17	$ 81.07
43	GIS Technician	$ 68.47	$ 89.29
44	GIS Analyst	$ 79.29	$ 103.39
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021			
45	Survey Manager	$ 161.47	N/A
46	Project Surveyor	$ 125.59	N/A
47	Survey Party Chief	$ 78.75	$ 102.69
48	Survey Technician	$ 65.89	$ 85.92
49	Survey Aid	$ 55.68	$ 72.61
50	Land Survey Office Technician	$ 90.94	$ 118.59
51	Drafter/CAD Operator II	$ 78.32	$ 102.14
52	Cartographic Technician	$ 80.43	$ 104.88
53	Clerical/Administration	$ 64.03	$ 83.50
54	GIS Technician	$ 70.53	$ 91.97
55	GIS Analyst	$ 81.66	$ 106.49



Request for Offers No. 3553

For

Bonneville Power Administration Professional Survey and Mapping Services

Technical/Management Proposal

RUEN-YEAGER & ASSOCIATES, INC.

219 Pine Street
Sandpoint, ID 83864
Phone: (208) 265.4629 E-mail: sandpoint@ruenyeager.com

3201 N. Huetter Road, Suite 102
Coeur d'Alene, ID 83814
Phone: (208) 292.0820 E-mail: ryacda@ruenyeager.com

January 15, 2016

Tracey Albright
Contracting Officer's Representative
Bonneville Power Administration
P.O. Box 491
Vancouver, Washington 98666

Re: RFO No. 3553 Professional Survey & Mapping Services – Request for Offers

Dear Tracey Albright,

In response to the invitation to participate in the Bonneville Power Administration (BPA) Professional Survey & Mapping Services solicitation, Ruen-Yeager & Associates, Inc. (RYA) is pleased to submit this Request for Offers which includes the Business/Pricing Proposal and the Technical/Management (Non-Price/Cost) Proposal. RYA is prepared and motivated to provide the necessary constant, reliable, and competent professional services required by BPA to accomplish design, construction, and acquisition goals.

RYA has completed our due diligence to carefully examine your Request for Offers and associated documents. We recognized and have attached the signed receipt of acknowledgement for RFO 3553 Amendments 001, 002, 003, and 004. We have assembled a team of qualified professionals, led by Darius L. Ruen, P.E. as Principal in Charge and supported by a staff experienced in BPA projects and protocol. Our core BPA team is available for sole commitment to meet the quality, budget, and schedule expectations of BPA projects.

Ruen-Yeager & Associates, Inc., operating as a Small Business Concern, has provided Professional Surveying and Mapping Services to BPA since 1989. We were awarded a BPA contract as a Master Contractor in 1993. Since 2009, we continued to provide services to BPA through a partnership, but have decided to once again submit as an independent Master Contractor. This decision was made to tighten quality control of our work product and improve the communication with BPA through professional management of services. We are confident Ruen-Yeager & Associates, Inc. can provide the Bonneville Power Administration with a quality, responsive, and complete spectrum of professional surveying and mapping services. We look forward to continuing our relationship with BPA as a Master Contractor in the upcoming years. Please do not hesitate to contact us if you have any questions or require clarification of this proposal.

Sincerely,
Ruen-Yeager & Associates, Inc.

(b) (6) [redacted]

Darius L. Ruen, P.E.

RFO 3553 AMENDMENT 001
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 11, 2015

The purpose of this modification is to revise the Instruction to Offerors, Attachment 001 and incorporate submitted contractor clarification questions and BPA responses.

A. Revise Instruction to Offerors, Submission of Offers as follows:

All offers shall be sent via email by January 4, 2016, no later than 3:00 PM to Kristi Carter at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov. No communication is authorized between the contractor and Bonneville Power representatives or employees other than the Contracting Officer's Representative, Tracey Albright, and the Contracting Officer's Assistant, Kristi Carter. Clarification questions may be submitted via email to Kristi Cater at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov no later than December 21, 2015, 3:00 p.m. PDT. Answers to clarification questions will be posted as an amendment to the solicitation via email to all potential offerors. If you decide not to submit an offer, it is requested that you contact Kristi Carter and Tracey Albright.

B. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 8 SUBCONTRACTING PLAN, as follows:

Provide an estimated dollar amount or percentage of work that may be awarded to subcontractors who are one of the supplier diversity program categories, or (2) a statement, with supporting reasons, that the nature of the contract does not offer subcontracting possibilities; state which disciplines would be performed in-house by your company and which may be assigned to subcontractors, if any. Identify qualifications of all subcontractors proposed, company name and key personnel. (Note: A detailed Subcontracting Plan may be required at time of award if applicable.

C. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 4 PAST PERFORMANCE A, as follows:

BPA focuses on information that demonstrates quality of performance relative to the complexity of the procurement under consideration. The offeror's references will assist BPA in collecting this information. References other than those identified by the offeror may be used by BPA. All such information may be used in the evaluation of the offeror's past performance.

D. Incorporate the following submitted contractor clarification questions, and BPA responses.

CONTRACTOR QUESTION #1: The subcontracting information on Attachment 1, page 6 appears to conflict with the instructions on Attachment 1, page 5: (page 6), please advise of the requirement.

BPA RESPONSE: See Item B in Amendment 001.

CONTRACTOR QUESTION #2: Attachment 1, page 5, item (4) Past Performance – requires the use of the "attached" Past Performance Reference Form. However, the form is not attached. Could you direct me to the correct form?

BPA RESPONSE: Refer to Item C in Amendment 001.

CONTRACTOR QUESTION #3: Is it permitted to use BPA projects and references/personnel on the Past Performance section/form? Or should all of the Past Performance project be from non-BPA clients?

BPA RESPONSE: BPA references are acceptable.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: RUEN YEAGER & ASSOCIATES, INC

Signature (by person authorized to sign): (b) (6) [redacted]

Date signed: 12/30/15

RFO 3553 AMENDMENT 002
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 30, 2015

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. **The offer due date has been extended to January 11, 2016 at 3:00 PM.**

B. **Incorporate the following submitted contractor clarification questions and BPA responses.**

CONTRACTOR QUESTION #1: Under Professional Qualifications – Item 1 references the person in responsible charge but also references the resumes of key personnel and states recent projects that they have overseen. Does this include Project Managers and Project Surveyors only or does it also include other key personnel that have managed key portions of a project?

BPA RESPONSE: Yes, Key Personnel are those individuals filling positions that oversee the whole project and/or specialized tasks of the project: Survey Managers, Project Surveyors, PLS's/RLS's, Survey Party Chiefs, and Land Survey Office Technicians.

CONTRACTOR QUESTION #2: Are examples of past projects desired or not?

BPA RESPONSE: Yes, the resumes should refer to past projects to address size, scope, and responsibilities and convey the Key individual's experience.

CONTRACTOR QUESTION #3: Does BPA have a preference of the type of electronic files (PDF, Word, etc) to be submitted? Is there a limit to file size?

BPA RESPONSE: The vendor can submit their responses to the RFO in either a PDF or Word format. The RFO 3553 Business Workbook and Technical Workbook shall be submitted in both the native Excel format and a PDF copy. The BPA email system has a limit of 10 mb's.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: QUEN-YEAGER & ASSOCIATES, INC
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 12/30/15

RFO 3553 AMENDMENT 003
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 4, 2016

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. **The offer due date has been extended to <u>January 18, 2016 at 3:00 PM.</u>**

B. **Incorporate the following submitted contractor clarification questions and BPA responses.**

CONTRACTOR QUESTION #1: Are we to add specialized equipment rates – i.e., ATV's, boats, UAV's, scanners, etc. – to the Business Workbook or leave them out altogether?

BPA RESPONSE: ATV's are a common specialized equipment that are regularly required to perform BPA work and can be added to the Business Workbook spreadsheet. All other specialized equipment will be priced out on an as needed basis at the time of a contract release or work assignment.

CONTRACTOR QUESTION #2: Is the selection panel the same for the RFO solicitation as it was for the SOQ solicitation?

BPA RESPONSE: The evaluation team is the same for the RFO as was for the RFQ, but the selection by the Contracting Officer, or Contracting Office, is based on evaluation team recommendations.

CONTRACTOR QUESTION #3: Can we add the requested equipment brand names and model numbers to the provided spreadsheet or would you like a separate spreadsheet with this information?

BPA RESPONSE: Yes, manufacture names and model names/models can be included in the Technical Workbook / Equipment worksheet for survey field equipment.

CONTRACTOR QUESTION #4: Please clarify under Technical Approach bullet one, is an "existing heavily wooded Substation Parcel" an existing substation to be expanded or just and existing parcel for a new substation?

BPA RESPONSE: This task should be interpreted as a Boundary and Topographic Survey for an expansion of an existing BPA substation on to an adjacent heavily wooded BPA fee owned parcel that is not physically delineated and monumented.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: RUKEN-YEAGER & ASSOCIATES, INC.
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 1/4/16

RFO 3553 AMENDMENT 004
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 12, 2016

The purpose of this amendment is to incorporate a submitted contractor clarification question and BPA's response.

A. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: We anticipate that allowing more than one pricing sheet will provide positive pricing for BPA by using subcontractors that are closer to work in some of your service areas. Will BPA accept different pricing workbooks, to reflect ours and our subs information, or do we need to develop one set of rates that will work for our entire team (prime and subcontractors)?

BPA RESPONSE: Vendors should only submit what has been requested in the "Instruction to Offerors" section of RFO 3553, but we can accept the submittal of additional Technical and Business Workbooks for subcontractors/partners. Each Prime Vendor must still have meet the Personnel requirements set out in the RFO without including subcontracting staff.

At a minimum, a core team comprised of the following personnel is to be available for BPA projects.

- Three Professional/Registered Land Surveyors licensed in one of the primary states within BPA's service area (Montana, Oregon, Idaho, & Washington) to act in a project surveyor and/or professional capacity. Each core team having licensees/registrants in two states within BPA's primary service area: Montana, Oregon, Idaho, & Washington.

- Two survey field crews; a two-person and a three person crew that can also act in the capacity of an office resource in assisting the PLS/RLS in research and processing/adjusting survey field data.

- Three survey office technicians for processing field data, creating reports, and CAD survey mapping duties; creating/updating survey and plan/profile maps.

- One staff member that is NGS OPUS-Projects certified.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: RUEN-YEAGER & ASSOCIATES, INC
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 1/12/16

Ruen-Yeager & Associates, Inc. (RYA) has read and is committed to provide the necessary core team, equipment and resources to support the Scope of Work outlined in the RFO 3553.

RFO SCOPE OF WORK

RYA understands Surveying and Mapping is a critical and sensitive issue to the Bonneville Power Administration (BPA). Project work may include the following: Impairment Studies; LiDAR Control and Verification; Records of Survey; Topographic Surveys/Mapping; Structure Staking; Deformation/Slide Studies; Transmission Line Surveys: New, Rebuilds, Refurbishment; Access Road Surveys, R/W Marking and Encroachment Surveys; Plan and Profile Map preparation/updates, and; Acquisition and Exhibit document preparation to support land fee and easement acquisition and permitting.

Projects are located within the BPA service area of Idaho, Oregon, Washington, western Montana, and small parts of eastern Montana, California, Nevada, Utah and Wyoming.

BPA's Survey & Mapping Services group will need constant and reliable assistance from contracted professional resources in order to accomplish BPA's design, construction and acquisition goals. The services required encompass a wide range of specific professional land surveying and mapping tasks, deliverables, procedures and requirements. A typical project/assignment may include one or more of the following work types:

- Location Surveys
- Boundary Surveys
- Topographic Surveys
- Construction Surveys
- Control Surveys
- Acquisition Surveys
- Monitoring Surveys
- As-Built surveys
- Plan/Profile Engineering Mapping
- Access Road Mapping
- Fish & Wildlife Mapping
- Records of Survey
- Acquisition Support Documents
- Condemnation Support Documents



1. Professional Qualifications

List of Key Personnel

RYA commits the following key personnel to the BPA RFO Master Contract. On the following pages are resumes with representative projects, level and years of experience.

PROFESSIONAL LAND SURVEYORS

Survey Managers
Richard E. Waltrip, PLS (Idaho, Washington, Montana)
Gilbert C. Bailey, PLS (Idaho, Washington, Montana)

Project Surveyors
Steven R. Sprague, PLS (Idaho)
Steven J. Binnall, PLS (Idaho)
Darrel G. Ramus, PLS (Idaho, Washington, California)
John H. Kinney, PE/PLS (Idaho, Washington, Alaska)

SURVEY OFFICE TECHNICIANS

Land Survey Office Technicians
Bruce L. Clark
Conrad J. Vogel
Steven J. Binnall, PLS
Steven R. Sprague, PLS
Gilbert C. Bailey, PLS
Don D. Crawford

Drafter/CAD Operator II
Stefani Mason
Joseph Mitchell
Don D. Crawford
Lisa Adair

Cartographic Technicians
Bruce L. Clark
Conrad J. Vogel
Stefani Mason

GIS Technicians
Bruce L. Clark
Conrad J. Vogel
Stefani Mason
Lisa Adair

GIS Analysts
Richard E. Waltrip, PLS (Idaho, Washington, Montana)
Darrel G. Ramus, PLS (Idaho, Washington, California)

SURVEY FIELD CREWS

Survey Party Chiefs
Don D. Crawford
James T. Cheslic
Steven J. Binnall, PLS

Survey Technicians
F. David Higgins
Brent Gruenhagen
Frank Heilman
Scott Kirkling
Peter Wilson

Survey Aides
Gregg Anderson
Matt Harwood
Kim Williams
Joseph Mitchell
Lisa Adair

CLERICAL/ADMINISTRATION

Jessica Brinkmeier
Kirsten Nickerson
Lisa Adair

List of Key Personnel

RYA commits the following BPA Core Team to the BPA RFO Master Contract.

BPA CORE TEAM

Richard E. Waltrip, PLS
Gilbert C. Bailey, PLS
Steven J. Binnall, PLS
Steven R. Sprague, PLS
Bruce L. Clark
Conrad J. Vogel
Don D. Crawford
James T. Cheslic
F. David Higgins
Brent Gruenhagen
Jessica Brinkmeier

Ruen-Yeager & Associates, Inc. staff had BPA Access Rights to perform their previous Work Assignments. Our staff returned all Access Rights to BPA when RYA voluntarily withdrew from Columbia Surveys, PLLC.

PRIOR BPA ACCESS RIGHTS

Logical Access
Bruce L. Clark

Badged Access
Bruce L. Clark
Steven R. Sprague, PLS
Conrad J. Vogel
James T. Cheslic
Steven J. Binnall, PLS

Project Wise
Bruce L. Clark

Non-Electric Energized Access
Don D. Crawford
James T. Cheslic
F. David Higgins
Steven J. Binnall, PLS

Transmission Line Corridor Access with TM key
Don D. Crawford



Darius L. Ruen, PE | Principal in Charge |Coeur d'Alene & Sandpoint, ID

EDUCATION

- B.S., Civil Engineering, University of Idaho (1976)

PROFESSIONAL REGISTRATIONS

- Idaho Professional Engineer 4376
- Montana Professional Engineer 8017E

PROFESSIONAL AFFILIATIONS

- Idaho Society of Professional Engineers
- National Society of Professional Engineers
- Consulting Engineers of Idaho
- American Council of Engineering Companies (ACEC)

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE

Mr. Ruen is one of the founders of Ruen-Yeager & Associates, Inc. and serves as President. He has more than **37 years** of experience in all phases of civil engineering with emphasis on project management, roadway design, and transportation engineering. Mr. Ruen served as the Principal in Charge for RYA during the previous Master Contract with BPA that RYA held from 1993 to 2009. He continued to represent RYA's and BPA's best interests during the Master Contract from 2009 to present through Columbia Surveys, PLLC. He solely made the decision for RYA to withdraw from the PLLC to allow RYA to again apply for a Master Contract where RYA could control communications, staffing, services, and deliverables.

As the President of RYA, Mr. Ruen oversees the Survey Managers' performance in meeting client needs and goals. He monitors project deliverables, schedules, and resource needs for each professional discipline of RYA. Mr. Ruen is committed to providing a competent core team to BPA that is thoroughly trained, understands the requirements of the BPA contract, and that has access to the resources to efficiently perform the work.

Mr. Ruen will take an active role in communicating with BPA ensuring contract expectations are fulfilled. He has the authority to assign staff and resources to meet the requirements of the BPA Master Contract. He will receive weekly reports from our job costing software allowing him to monitor schedules and budgets for the various Work Assignments under the Master Contract. Mr. Ruen will oversee the Survey Manager's use of the resource allocation portion of the software to ensure adequate resources are provided to each work assignment and that deliverables and schedules are met. Mr. Ruen, along with the Survey Manager, will communicate with the BPA COTR on a weekly basis providing status reports for Work Assignments including any issues or needs that may affect project schedules or budgets.

PRINCIPAL IN CHARGE OVERSIGHT:

I-5 Corridor Reinforcement (BPA) $425k – With RYA working as a sub-consultant to HDR, Mr. Ruen provided oversight of title certifications for title commitments in support of future right-of-way acquisition activities for the project.

Beck Road Interchange (RL Wadsworth) $1.4M – Provided oversight for utility coordination, utility design, right-of-way surveying, right-of-way acquisition, construction engineering and inspection, and record drawings.

Prairie Avenue/Lancaster Avenue Overlay Projects (Post Falls Highway District) $23k – Provided oversight of overlay projects on two lengths of Highway District roads.

Darius L. Ruen, PE resume continued…

SH53, N. Pleasant View Turnbays (Post Falls Highway District/Idaho Department of Transportation) $79k – Provided the survey, plans, specifications and estimate for the safety mitigation project adding turn lane to a congested State Highway.
Greensferry Overpass (RL Wadsworth) $254k – Provided oversight for utility coordination, utility design, right-of-way surveying, right-of-way acquisition, and construction surveying and staking.
FISMA Compliance Effort for Ruen-Yeager & Associates, Inc. – Provided oversight of the FISMA compliance effort.



Richard E. Waltrip, PLS | Survey Manager | Coeur d'Alene, ID

EDUCATION

- B.S., Geology, University of Missouri, Columbia, MO 1978
- Legal Principal of Land Surveying, University of Missouri, Rolla, MO 1988
- Intro to Surveying, University of Missouri, Columbia, MO 1990
- Advanced Surveying, Longview Comm. College, Kansas City, MO 1989
- Error Analysis in Survey Measurements, Longview Comm. College, Kansas City, MO 1989

PROFESSIONAL REGISTRATIONS

- Idaho (PLS 9114)
- Washington (PLS 35141)
- Montana (PLS 14729)

CERTIFICATION/TRAINING

- Principles of Project Management 2002
- Focused Project Management 2004
- Contracts and Risk Management 2005

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE

Mr. Waltrip has more than **35 years** of experience on a wide variety of projects. He has an excellent reputation for expertise on right-of-way projects and large scale mapping projects with over **22 years** of staff management experience. Mr. Waltrip has extensive experience with right-of-way, topographic, cadastral, ALTA/ACSM, construction and control surveys, including coordination of photogrammetric mapping and GIS mapping as part of the development of large project base maps

Mr. Waltrip has developed GIS data collection standards for projects and local agencies. He is a recognized leader among his professional peers for service with the Land Surveyors Association of Washington and the local chapter of the International Right-of-way Association and has written articles for Right of Way Magazine and the Evergreen Surveyor. His article in the Evergreen Surveyor on the preservation of survey monuments was selected as the article of the year for 2007. **Mr. Waltrip has managed RYA's efforts providing Title Reviews under staff augmentation to HDR for the I-5 Corridor Reinforcement Survey & Mapping Project since December 2013.**

RECENT PROJECTS

I-5 Corridor Reinforcement (BPA) $425k – Working as a sub-consultant to HDR, Rich served as Project Manager and Senior Project Surveyor performing title certifications for over 200 title commitments in support of future right-of-way acquisition activities for the project.

Huetter Road UAS Feasibility Study (Empire Unmanned) - Ruen Yeager, working for Empire Unmanned, is participating in an Unmanned Aerial System (UAS) feasibility study for a road design project in Post Falls, Idaho. The purpose of the project is to determine the feasibility of utilizing unmanned aerial vehicles and mapping systems to develop Survey Base Maps suitable for roadway design. Project tasks include project control, survey field support, data processing, accuracy analysis, workflow development and development of the final design base map.

Richard E. Waltrip, PLS resume continued…

CATEGORY OF EXPERIENCE

A. Route Surveying: 35 Years
Project Manager and lead surveyor on large scale road, bridge, railroad, water, sewer, gas layout of streets, roads, bridges, water lines, sewer lines, various utilities, and preparation of right-of-way documents for many clients including BPA.

B. Topographic Surveying: 37 Years
Project Manager and lead surveyor for topographic surveys for substations, roadways, bridges, railroads, gas transmission lines, electric transmission lines, private development and municipal infrastructure. Clients include BPA, DOT's for the States of Washington, Idaho and Montana, Federal agencies such as USBR, NPS and USFS, local municipalities, UP and BNSF railroads. TransCanada, Williams Pipeline, and private developers.

C. GPS Experience: 15 Years
Project Manager on large control projects utilizing GPS static control networks, RTK GPS methods, real time networks and OPUS.

D. Transmission Line Experience: 15 Years
Survey crew coordination for BPA transmission line projects since 2000 including boundary and topographic location of proposed transmission lines.

E. Resource Grade GPS Experience: 12 Years
Project Manager on various projects utilizing resource grade GPS equipment including data collection for WSDOT utility franchise projects, environmental studies, and EIS roadway projects.

F. Cadastral Experience: 37 Years
Involved with numerous cadastral projects in Washington, Idaho, Montana, Missouri and Indiana for Federal, State and local agency clients, as well as private sector clients. Project tasks included the recovery of original GLO monuments and accessories, monument transmission and electric transmission projects. Project tasks included topographic data collection and construction rehabilitation, application of single and double proportion measurements to establish lost corners, retracement of GLO and tribal treaty lines and preparing and filing corner records.

G. Legal Descriptions/Exhibit Prep: 30 Years
Worked on multiple projects with State and local agencies, as well as BPA, involving acquisition. Tasks include retracement of existing rights-of-way, preparing right-of-way plans, exhibits and legal descriptions for right-of-way acquisition for road, water, sewer and pipeline projects and reviewing/certifying title for LAR and ARAR acquisition documents for BPA projects.

H. Survey Maps with MicroStation: 15 Years
Project Manager on several projects for the Idaho DOT, Williams Pipeline, UP Railroad and BNSF Railroad involving the preparation of survey maps with MicroStation.

I. Survey Across Tribal/Sensitive Areas: 15 Years
Project Manager for several USBR projects in Washington as part of a 5 year land survey on-call contract. Rich served as Survey Manager for projects with USFS and BLM for projects in Washington and Idaho. Rich served as a survey crew coordinator for USACE projects in Washington, Idaho and Montana.

J. GIS Attribute Data Collection: 10 Years
Project Manager for a variety of projects involving GIS attribute data collection for incorporation into ArcGIS. Projects include both field data collection and record document data collection. Project tasks have included the coordination of environmental service providers and the development of the attribute collection standards.

Richard E. Waltrip, PLS resume continued…

K. LiDAR Point Cloud Data: 6 Years
Served as Project Manager for several road and highway projects involving tripod mounted and mobile LiDAR data collection. LiDAR data was utilized to develop design level Survey Base Maps.



Gilbert C. Bailey, PLS | Survey Manager |Sandpoint, ID

EDUCATION

- Walla Walla University 1982
  Bachelor of Science in Bio-Medical Electronics

PROFESSIONAL REGISTRATIONS

- Idaho (PLS 10559)
- Washington (PLS 46875)
- Montana (PLS 39514)

CERTIFICATION/TRAINING

- Trimble Business Center v3.4 General Survey Course – 2015
- OPUS – Projects Manager's Training - 2015
- NFIP Elevation Certificate Seminar - 2011
- 3D Laser Scanning Technology Seminar – 2013

PROFESSIONAL AFFILIATIONS

- Idaho Society of Professional Land Surveyors
- Land Surveyors Association of Washington
- National Society of Professional Land Surveyors

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE

Mr. Bailey has more than **22 years** of combined experience in the land surveying profession. He has worked as an instrument man, party chief, survey technician, project surveyor, or survey manager on a variety of surveying projects including boundary surveys, cadastral surveys, topographic surveys, residential and commercial subdivisions, ALTA Land Title Surveys, FEMA Elevation Certificates and Letters of Map Amendment. **Mr. Bailey is the Operations Manager of our Sandpoint Survey Group.** In addition to management responsibilities, typical duties include record research, evaluation survey data and field evidence, boundary resolution, writing legal descriptions, survey field crew coordination, and directing production of survey deliverables. **Mr. Bailey has provided title review professional services for BPA under staff augmentation to HDR for the I-5 Corridor Reinforcement Survey & Mapping project since February 2015.**

RECENT PROJECTS

I-5 Corridor Reinforcement (BPA) $425k – Ruen-Yeager & Associates, Inc. provided sub-consulting services to HDR on this project. Gilbert prepared title certifications for title commitments in support of future right-of-way acquisition activities.

Phillips 66 / Yellowstone Pipeline, $48k - Performed as Project Manager/Surveyor; Developed Control Network(s); Supervised production of Survey Deliverables (GIS product for ±10 miles of pipeline re-route; Record of Survey(s) and Legal Descriptions for Washington DNR Aquatic Easements).

Huetter Road Improvements, $35k - Lead Surveyor for RTK RTN/VRS survey of right-of-way improvements and utility locations and supervised production of Survey Deliverables (Plan & Profile drawings).

Ashwood Notch Subdivision (±90 lots), $45k - As Project Manager/Surveyor, Gilbert directed the initial topography & boundary ties (RTK GPS and Robotic Total Station) to support subdivision layout & street design; Reviewed lot & boundary calculations; Setup Construction staking for civil infrastructure (road/curb/sidewalk/water/sanitary sewer/storm sewer/dry utilities; and supervised the production of Record drawings; Project consisted of three phases constructed over a ±3 year period.

Gilbert C. Bailey, PLS resume continued…

CATEGORY OF EXPERIENCE

A. Route Surveying: 22 Years
Involved in the project management and surveying of private land development projects that included street/road, sanitary sewer, storm sewer, water main and dry utilities route surveys. Survey work included topographic data collection and construction layout of streets, roads, and various utilities, including right-of-way and easements for many clients.

B. Topographic Surveying: 22 Years
Involved in the project management and surveying of topographic surveys including roadways and municipal infrastructure. Clients include local municipalities, Idaho Department of Transportation and Private Developers.

C. GPS Experience: 5 Years
Worked with post processed static GPS control networks, RTK/RTN/VRS surveys. He has experience in processing GPS data in Trimble Business Center and recently completed OPUS Projects Manager Training.

D. Transmission Line Experience: 0 Years

E. Resource Grade GPS Experience: 13 Years
Gilbert has used resource grade GPS equipment on various projects for cadastral and record corner search and collected "way-points" for preliminary roads/lot layout for private land development and boundary survey projects.

F. Cadastral Experience: 22 Years
Involved in the project management and surveying for numerous private sector cadastral projects in Idaho and Washington. Field duties included PLSS corner/accessory search, recovery and evaluation of corner evidence; Re-setting/establishing corner monuments and accessories. Office work included PLSS corner history research, preparation and filing of Land Corner Records and Records of Survey.

G. Legal Descriptions/Exhibit Prep: 22 Years
Involved in the project management and surveying in preparing legal descriptions and exhibits for road/utility easements, subdivision boundaries and boundary line adjustments.

H. Survey Maps with MicroStation: 1 Year
Involved, as a Project Surveyor, reviewing survey products created with MicroStation. In addition, he has 21 years of CAD experience with Autodesk products (AutoCAD, Land Development Desktop & Civil 3D) that includes production of survey and engineering products (Records of Survey, Plats, Topographic Maps, Site Plans, Engineering Plan/Profile design drawings and Land Description Exhibits) and the supervision and review of the production of final survey products.

I. Survey Across Tribal/Sensitive Areas: 4 Months
As Project Manager/Surveyor, Gilbert coordinated field data collection and production of Records of Survey for two Washington State DNR Aquatic Easements crossing of the Spokane River. He was the Survey Manager for 4 recreation improvement projects along the Columbia River for Grant County PUD. Project duties included primary control verification/densification and improvement "as-built" surveys.

J. GIS Attribute Data Collection: 1 Month
As the Project Manager/Surveyor, Gilbert supervised the establishment of control, processed field data and produced GIS deliverable for an as-built pipeline survey along the North Fork of the Coeur d'Alene River.

K. LiDAR Point Cloud Data: 0 Years



Steven R. Sprague, PLS | Project Surveyor |Coeur d'Alene, ID

EDUCATION

- Central Oregon Community College Bend, OR – 1981-1984
- Oregon Institute of Technology Klamath Falls, OR – 1981-1983 Coursework: Fundamentals of Surveying, Advanced Survey - Computation Route Surveying, and Control Surveying.

PROFESSIONAL REGISTRATIONS

- Idaho (PLS 13554)

CERTIFICATION/TRAINING

- Trimble RTK/Static GPS Seminar, January 2002
- Trimble GPS Seminar, January 2003
- Trimble Advanced GPS Training, January 2004
- OPUS-Project Manager's Training 2011

PROFESSIONAL AFFILIATIONS

- Idaho Society of Professional Land Surveyors
- Land Surveyors Association of Washington

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE

Mr. Sprague has more than **36 years** of combined experience in the surveying profession working as an instrument man, party chief, survey technician and project surveyor on a variety of projects including construction staking projects on large-scale roadway, bridge, grading, marine surveys, boundary surveys, topographic surveys, conventional and GPS control surveys, aerial surveys, and civil design surveys. **Mr. Sprague has provided professional services on BPA projects since 2009** as a Survey Manager and Project Surveyor on multiple BPA Transmission Line Projects. He has performed field survey calculations, crew prep, and crew coordination; processed and evaluated survey data, red check field note sheets, preplanning and adjustment of major GPS static control networks and coordination with BPA Project Surveyor. Mr. Sprague has produced BPA Reports, creating/populating L-Line Reports, Crossing Inventory Reports, POTBM Reports and Structure List Reports. Mr. Sprague has also performed Mapping and Acquisition services reviewing and certifying title for LAR, LDR, and ARAR Acquisition documents, preparing/researching support documentation, Quality assurance and quality control of acquisition, Mile Maps, and Survey Base submittals and complete acquisition check lists.

RECENT PROJECTS

Garrison-Anaconda No. 1 (BPA) $429k – Project Surveyor, ROW Easement Acquisition, Field Notes/Documents, Deliverables and QA/QC
Kalispell-Kerr No. 1 (BPA) $498k - Performed ROW Easement Acquisition and QA/QC services.
Bell-Boundary Fiber Optics (BPA) $490k - Performed as Survey Manager, Project Surveyor, ROW Easement Acquisition, Field Notes, Deliverables, QA/QC
Walla Walla-Tucannon River No. 1 (BPA) $1.2 M - Performed as Survey Manager, Project Surveyor, Control Network, ROW Easement Acquisition, Field Notes/Documents, and Deliverables
Central Ferry-Lower Monumental No. 1 (BPA) $1.3M –Performed a role in route survey and field work.
McNary-John Day No. 1 (BPA) $518k – Performed a role in Route Survey and Field Work, and Field Notes/Documents

Steven R. Sprague, PLS resume continued…

CATEGORY OF EXPERIENCE

A. Route Surveying: 36 Years
Performed as lead surveyor on large scale road, bridge, grading and marine surveys, as well as multiple BPA Transmission Line projects. Survey work includes topographic data collection and construction layout of streets, roads, bridges, and various utilities, including right-of-way and easements for many clients including BPA.

B. Topographic Surveying: 6 Years
Performed as lead surveyor for topographic surveys including substations, roadways, bridges, and municipal infrastructure. Clients include BPA, local municipalities, Idaho Department of Transportation, Design Build Transportation, and Private Developers.

C. GPS Experience: 15 Years
Performed on large control projects utilizing, preplanning and adjustments to major GPS static control networks, incorporating OPUS-projects manager adjustments, OPUS database use and TBC adjustments. Steve has performed RTK/RTN surveying for all types of projects including construction, boundary, as-built and topographic surveying.

D. Transmission Line Experience: 6 Years
Performed as surveyor on BPA transmission line projects since 2009 including boundary and topographic location of proposed transmission lines. The data provided for the development of transmission line access road and easement legal descriptions.

E. Resource Grade GPS Experience: 15 Years
Performed on various projects utilizing resource grade GPS equipment including data collection for access roads, cadastral corner search, and mapping waypoints for "To Reaches" for project control points.

F. Cadastral Experience: 15 Years
Involved with numerous cadastral projects in Washington, Idaho, and Montana for both BPA and the private sector. Field duties include PLSS corner and accessories search, re-establishing RP's and monuments, and preparing and filing corner records.

G. Legal Descriptions/Exhibit Prep: 4 Years
Worked on multiple BPA projects involving acquisition. Tasks include reviewing legal descriptions/certifying title for LAR, LDR, and ARAR acquisition documents, preparing and marking up supporting documentation, and QA/QC of acquisition documents and exhibits prepared by others.

H. Survey Maps with MicroStation: 0 Years

I. Survey Across Tribal/Sensitive Areas: 6 Years
Steve has been involved with numerous BPA projects in Eastern Washington and Western Montana that have been located on Tribal land and have included environmental and cultural sensitive areas. Projects include McNary-John Day No. 1, Walla Walla to Tucannon River No. 1, and Kalispell – Kerr No. 1.

J. GIS Attribute Data Collection: 0 Years

K. LiDAR Point Cloud Data: 6 Years
Worked on multiple projects involving Lidar data collection. Duties included evaluating the classified LiDAR data against the RTK/Conventional survey data for accuracy. Typical locations to verify would be substation deadend attachment points, tower centroids, and various hard surfaces throughout the transmission line right-of-way.



Steven J. Binnall, PLS | Project Surveyor |Sandpoint, ID

EDUCATION

- Flathead Valley Community College 2006 - Associates Degree in Land Surveying

PROFESSIONAL REGISTRATIONS

- Idaho (PLS 14214)

CERTIFICATION/TRAINING

- OPUS – Projects Manager's Training
- Hazwopper: 40 hour (2013) 8 Hour Refresher (2014)

EXPERIENCE SUMMARY

Mr. Binnall' s survey career started as summer employment in 1994, marking and posting the USFS boundary line in northern Idaho and western Montana. In 1998, he began working full time on contracts for Bonneville Power Administration, Plum Creek Timber, the Libby Asbestos Superfund Project, major subdivisions, and general private sector boundary surveys. He attended school in Kalispell, Montana obtaining his surveying degree while working as a party chief for boundary surveys. Education, experience, and licensure have developed Mr. Binnall' s office oriented tasks to experience with GPS, LiDAR applications, drafting, title review, and records research. **Mr. Binnall has performed as a Project Surveyor on BPA projects since 2010 and as a Survey Technician since 1998.**

RECENT PROJECTS

Kalispell-Kerr No. 1 (BPA) $498k - Performed as Project Surveyor, Control Network, Route Survey and Field Work, Field Notes/Documents, Deliverables, QA/QC

Palisades-Swan Valley (BPA) $415k - Performed as Survey Manager, Project Surveyor, Control Network, Field Notes/Documents, Deliverables

CATEGORY OF EXPERIENCE

A. Route Surveying: 17 Years
Performed as a survey technician since 1998 on contracts for Bonneville Power Administration (BPA). Since 2010, Steve has provided Professional Land Surveyor services on BPA projects including numerous BPA Transmission Line Projects.

B. Topographic Surveying: 15 Years
Performed on topographic surveys including substations, roadways, bridges, mines and municipal infrastructure. Clients include BPA, local municipalities, and Private Developers.

C. GPS Experience: 15 Years
Performed on large scale control projects utilizing, preplanning and adjustments to major GPS static control networks, incorporating OPUS-projects manager adjustments, OPUS database use and TBC adjustments. Steve has performed RTK/RTN surveying for all types of projects including transmission line, construction, boundary, as-built and topographic surveying.

D. Transmission Line Experience: 17 Years
Performed as surveyor on BPA transmission line projects since 2010 including boundary and topographic location of proposed transmission lines. Steve was involved in providing the data for the development of transmission line access road and easement legal descriptions.

Steven J. Binnall, PLS resume continued…

E. Resource Grade GPS Experience: 3 Years
Performed on various projects utilizing resource grade GPS equipment including data collection for access roads, cadastral corner search, and mapping waypoints for "To Reaches" for project control points.

F. Cadastral Experience: 15 Years
Performed cadastral surveys over the last 15 years on numerous survey projects including boundary retracement, land survey work, conventional boundary surveying, and restoration of corners.

G. Legal Descriptions/Exhibit Prep: 3 Years
Worked on many BPA acquisition projects. Tasks include reviewing legal descriptions/certifying title for LAR, LDR, and ARAR acquisition documents, preparing and marking up supporting documentation, and QA/QC of acquisition documents and exhibits prepared by others.

H. Survey Maps with MicroStation: 5 Years
Experience with MicroStation InRoads, creating topographic maps and DTMs, record of surveys for retracements, exhibits, acquisition maps, and plan maps.

I. Survey Across Tribal/Sensitive Areas: 17 Years
Extensive experience with working on cultural and environmentally sensitive areas and has experience with the process and protocol of working on these sites.

J. GIS Attribute Data Collection: 2 Years
Experience in shapefile creation from survey data, GIS data entry using deeds, aerial photos, and PLSS data, as well as GIS database creation and editing.

K. LiDAR Point Cloud Data: 2 Years
Experience working on multiple projects involving LiDAR data collection. His experience includes evaluating the classified LiDAR data against the RTK/Conventional survey data for accuracy. Typical locations to verify would be substation dead end attachment points, tower centroids, and various hard surfaces throughout the transmission line right-of-way.



Darrel G. Ramus, PLS | Project Surveyor-GIS Analyst| Coeur d'Alene, ID

EDUCATION

- B.S., General Science, Oregon State University - 1984
- U.S. Air Force, Navigator and Electronic Warfare Officer Training - 1986
- Graduate Certificate, GIS and Remote Sensing, University of Idaho - 2005

PROFESSIONAL REGISTRATION

- Idaho (PLS 11187)
- Washington (PLS 43617)
- California (PLS 7192)
- GIS Professional, GISP (68064)

CERTIFICATION/TRAINING

- Trimble Advanced GPS Seminar 2004
- Trimble Express Training 2008, 2009, 2010, 2011
- NFIP Elevation Certificate Seminar 2011
- Western Brownfields Workshops 2010, 2011
- ARRL Ham Radio Training & License 2013

PROFESSIONAL AFFILIATIONS

- Idaho Society of Professional Land Surveyors
- Land Surveyors Association of Washington
- National Society of Professional Land Surveyors
- Urban & Regional Information Systems Association
- Northwest GIS Users Group

EXPERIENCE SUMMARY

Mr. Ramus has more than **25 years** of experience in the land surveying profession. As a Professional Land Surveyor, he ensures each survey project meets or exceeds state requirements and standards of practice. He has technical and management experience in all aspects of the land surveying profession including survey control, boundary, cadastral surveys, topography, photogrammetry, bathymetric, static and real-time GPS, land development, design surveys, right-of-way platting, utility coordination, construction staking, quality control and GIS database mapping. As a project surveyor, he manages scheduling, budgets, survey crews and CAD design staff for large projects and routinely coordinates with clients, design staff and a wide variety of team consultants. He utilizes and manages a wide array of software for data analysis, mapping and project management including Autodesk Infrastructure Suite, AutoCAD, AutoDesk Infrastructure Suite, Trimble Business Center, MicroStation, InRoads, ESRI ArcGIS and Microsoft Project. Mr. Ramus received a Bachelor of Science in General Science with minor studies in Math and Computer Science from Oregon State University in 1984, was a U.S. Air Force Navigator and Electronic Warfare Officer until 1990 and completed a Graduate Certificate in GIS and Remote Sensing with the University of Idaho in 2005. **Mr. Ramus has provided title review professional services under staff augmentation to HDR for the I-5 Corridor Reinforcement Survey & Mapping project since September 2014.**

RECENT PROJECTS

I-5 Corridor Reinforcement (BPA) $425k – Performed as a Project Surveyor performing title review and certification for a portion of over 200 title commitments in support of future right-of-way acquisition activities for the project.

Bridging the Valley Rail Corridor Project (Spokane Regional Transportation Council) $250k – Project surveyor and manager for static GPS control network, aerial photo control, conventional traversing, design surveys, topography mapping and existing right-of-way mapping along the Idaho portion of the rail corridor (23 miles) in Kootenai County, ID.

Darrel G. Ramus, PLS resume continued…

I-90 and Beck Road/Pointe Parkway Interchange (RL Wadsworth) $1.4M – Project surveyor and manager for GPS control, design surveys, topography mapping, utility mapping, ownership maps, final right-of-way plans and legal descriptions for a new design-build interchange connecting the north and south sides of I-90 at Beck Road and Pointe Parkway in Post Falls, ID.

Pend Oreille Bay Trail Brownfields Assessment $85K – Project surveyor and manager for the Pend Oreille Bay Trail (POBT) located at historic mill sites and an existing railroad right-of-way along the Lake Pend Oreille shoreline fronting Sandpoint and Ponderay. Provided support on field assessment, sampling and testing, corridor surveys, base mapping, boundary surveys and development of the project GIS database that included environmental, landowner parcels, orthophotography, LiDAR based contours and georeferenced scans of historic mill sites.

CATEGORY OF EXPERIENCE

A. Route Surveying: 22 Years
Performed as a project surveyor and manager on numerous large scale projects including roads, highways, bridges railroad and power line corridors. Survey related work includes topographic data collection, building DTM surfaces, utility surveys and boundary surveys for project base mapping needs. Manages title and records research for boundary analysis and right-of-way mapping and preparation of legal descriptions and right-of-way plans for acquisition of right-of-way parcels and easements. Coordination and calculations for construction layout of streets, roads, bridges, and utilities during the construction phase.

B. Topographic Surveying: 25 Years
Performed as a project surveyor and manager for topographic surveys including roadways, bridges, site developments, environmental reclamation and municipal infrastructure. Clients local road districts, municipalities, Idaho Department of Transportation, design-build contractors and private developers.

C. GPS Experience: 20 Years
Performed as a project surveyor and manager on numerous large scale control projects utilizing preplanning and data processing for GPS fast-static control networks, OPUS database integration and TBC analysis and adjustments. Darrel has performed RTK/RTN surveying for all types of projects including construction, boundary, as-built and topographic surveying.

D. Transmission Line Experience: 2 Years
Performed as a project surveyor on transmission line projects for Avista and various projects that were affected by transmission line crossings and easements including boundary and topographic surveys and mapping.

E. Resource Grade GPS Experience: 2 Years
Supported survey crews on various projects utilizing resource grade GPS equipment including data collection for access roads, cadastral corner search, and mapping waypoints for "To Reaches" for project control points. He also has prior experience integrating laser and bathymetric sensors with resource grade GPS equipment and software.

F. Cadastral Experience: 20 Years
Performed as a project surveyor and manager on numerous cadastral projects including records research, PLSS corner and accessories search, re-establishing RP's and monuments, and preparing and filing corner records.

G. Legal Descriptions/Exhibit Prep: 20 Years
Performed as a project surveyor and manager on numerous projects involving right-of-way acquisition, access and utility easements, property line adjustments and subdivisions. Tasks include reviewing and certifying title, property acquisition documents, preparing

Darrel G. Ramus, PLS resume continued…

and marking up supporting documentation, and QA/QC of acquisition documents and exhibits prepared by others.

H. Survey Maps with MicroStation: 10 Years

As a project surveyor and manager, Darrel has experience working with CAD technicians on MicroStation based projects for state transportation other agencies, integrating surveying and GIS data, reviewing mapping DTM surfaces and certification of final exhibits under his direction.

I. Survey Across Tribal/Sensitive Areas: 15 Years

Performed as a project surveyor and manager on various projects within tribal lands or environmentally sensitive areas that required coordination for access permission, brownfields assessments, sampling and testing, hazardous waste cleanup and site reclamation.

J. GIS Attribute Data Collection: 12 Years

Performed as a project surveyor and manager on numerous projects that utilize, integrate and generate GIS data layers including extensive parcel layer mapping for the cities of Sandpoint and Ponderay in Idaho, environmental field assessment, sampling and testing and various transportation related data for planning and right-of-way analysis and the GIS data layers and attributes were prepared in ArcGIS format.

K. LiDAR Point Cloud Data: 1 Year

Worked on projects involving integration of LiDAR data collection for planning and base mapping needs. Duties included evaluating the classified LiDAR data against RTK and conventional survey data for accuracy, generation of contour data from the bare earth surfaces and identification of structures, water and vegetation regions.



John H. Kinney, PE/PLS | Project Surveyor-Engineer | Coeur d'Alene, ID

EDUCATION

- M.S., Engineering Management, University of Alaska - 1977
- B.S., Civil Engineering, St. Martin's College - 1963
- B.A., Business Administration /Economics, College of Idaho - 1961
- Civil Service Training (574-hours): Contract Administration, Project Management, Contract Documents, Personnel Management, CORT Management, etc.

PROFESSIONAL REGISTRATIONS

- Professional Engineer and Land Surveyor, Idaho (1969)
- Professional Engineer, Washington (11031)
- Professional Engineer, Alaska (4008-E)

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers
- Idaho Association of Land Surveyors
- American Military Engineers

EXPERIENCE SUMMARY

Mr. Kinney has **47 years** of experience in all phases of civil engineering and land surveying. Much of his time was with the Federal Government as a heavy construction (dams) project manager for the Corps of Army Engineers (9 years), and Chief of the Engineering Division for the National Marine Fisheries Service - Alaska Region (14 years) and Chief of the Facilities Management Division National Weather Service – Pacific Region (6 years). His last 18 years have been in the private sector with surveying manager and general manager responsibilities for private firms. His specialized expertise includes project management/planning; contract preparation and administration; construction engineering and management; hydraulic, marine, facilities, and structural design/ engineering; land surveying; and personnel management. **Mr. Kinney has provided title review professional services under staff augmentation to HDR for the I-5 Corridor Reinforcement Survey & Mapping project since September 2014.**

RECENT PROJECTS

I-5 Corridor Reinforcement (BPA) $425k – Performed title certifications for title commitments in support of future right-of-way acquisition activities for this project. Ruen-Yeager & Associates, Inc. provided sub-consulting services to HDR on this project.

Post Falls Highway District – Provided services as the Highway District Surveyor, providing acquisition ownership research and right-of-way surveys in support of transportation related projects.

CATEGORY OF EXPERIENCE

A. Route Surveying: 10 Years
Provided services on the Yellowstone Pipeline that traversed from Billings, Montana to Spokane, WA. John also provided surveying services for the State of Idaho on Highway 95 in North Idaho.

B. Topographic Surveying: 7 Years
Responsible charge for the topographic survey of pump stations for the Yellowstone Pipeline, as well as bathymetric surveying for a hydroelectric site in a remote area of Alaska, including the survey across a fiord and determining the alignment and depth of the electric line.

John H. Kinney, PLS resume continued…

John directed the survey for the National Guard facility in Coeur d'Alene.

C. GPS Experience: 0 Years

D. Transmission Line Experience: 5 Years

Performed transmission line surveying for the National Marine Fisheries Service on a dam project site, as well as river crossings and soundings for the Yellowstone Pipeline.

E. Resource Grade GPS Experience: 0 Years

F. Cadastral Experience: 25 Years

Provided cadastral and topographic survey for a National Marine Fisheries facility in Alaska, and for several pump stations for the Yellowstone Pipeline.

G. Legal Descriptions/Exhibit Prep: 25 Years

Prepared legal descriptions extensively throughout his career. Most recently John provided Title Review services on the I-5 Corridor Reinforcement Project for BPA.

H. Survey Maps with MicroStation: 0 Years

I. Survey Across Tribal/Sensitive Areas: 10 Years

Extensive experience with working on cultural and environmentally sensitive areas and has experience with the process and protocol of working on these sites. Some representative projects included the Yellowstone Pipeline in Idaho, Montana and Washington, and the City of Plummer on the Coeur d'Alene Tribal Reservation.

J. GIS Attribute Data Collection: 0 Years

K. LiDAR Point Cloud Data: 0 Years



Bruce L. Clark | Land Survey Office Technician | Sandpoint, ID

EDUCATION

- General Studies, Palomar College San Marcos CA - 1982-1984, 1986

CERTIFICATION/TRAINING

- AutoCAD Training - 1997
- Survey Correspondence School - 1997
- BPA Hybrid Map Training
- BPA Shape File Training
- BPA Plan Map Training
- BPA Profile Training

EXPERIENCE SUMMARY

Mr. Clark has worked as CAD Operator/Designer for Ruen-Yeager & Associates, Inc.'s CAD department for the past **18 years**. Mr. Clark works closely with the BPA RYA core team to provide a high quality set of project deliverables. Mr. Clark has served as our final review on deliverables to be sent to BPA and other clients. He is committed to RYA's BPA core team and will continue to serve a vital role in RYA's services to BPA. Mr. Clark has a broad range of survey CAD experience including route location, boundary and topographical. In addition, He is well versed in numerous computer software programs including, but not limited to, MicroStation V8i, Bentley Descartes V8i, Bentley Inroads V8i, Bentley Inroads Survey V8i, Bentley Map V8i, ERSI ARC Map 10.3, Autodesk Infrastructure Suite, Word and Excel. **Mr. Clark provided specialized training to BPA staff in 2012 for a process he developed converting LiDAR xyz files to .pod files, and importing/referencing in MicroStation. Mr. Clark has been providing his professional services on BPA projects since 2008.**

RECENT PROJECTS

Hot Springs-Rattlesnake No. 1 (BPA) $310k - Performed as Senior CAD, reviewing acquisition documents, hybrid maps, constructing reports, LiDAR confidence ground and aerial, L-line, Crossing Inventory Reports, and update acquisition tracking, review submittals and shape files, and submitted deliverables VIA ProjectWise to BPA. Bruce performed as CAD supervisor providing support from BPA My PC to team members and CAD operators.

Rattlesnake-Garrison No. 1 (BPA) $129k - Performed as Senior CAD, reviewing Acquisition Documents, Hybrid maps, constructing reports, LiDAR confidence ground and aerial, L-line, Crossing Inventory reports, and update Acquisition tracking. Review submittals, and shape files. Submitting deliverables VIA ProjectWise to BPA. Bruce performed as CAD supervisor providing support from BPA My PC to team members and CAD operators.

Garrison-Anaconda No. 1 (BPA) $429k - Performed as Senior CAD, reviewing Acquisition Documents, Hybrid maps, constructing reports, LiDAR confidence ground and aerial, L-line, Crossing Inventory reports, and update Acquisition tracking. Review submittals, and shape files. Submitting deliverables VIA ProjectWise to BPA. Bruce performed as CAD supervisor providing support from BPA My PC to team members and CAD operators.

Bruce L. Clark resume continued…

Kalispell-Kerr No. 1 (BPA) $498k - Performed as Senior CAD, reviewing Acquisition Documents, Hybrid maps, constructing reports, LiDAR confidence ground and aerial, L-line, Crossing Inventory reports, and update Acquisition tracking. Review submittals, and shape files. Submitting deliverables VIA ProjectWise to BPA. Bruce performed as CAD supervisor providing support from BPA My PC to team members and CAD operators.
Palisades-Swan Valley (BPA) $415k - Performed as Senior CAD, reviewing Acquisition Documents, Hybrid maps, constructing reports, LiDAR confidence ground and aerial ,L-line, Crossing Inventory reports, and update Acquisition tracking. Review submittals, and shape files. Submitting deliverables VIA ProjectWise to BPA.
Bell Boundary Fiber Optics (BPA) $490k - Performed as Senior CAD, reviewing Acquisition Documents, Hybrid maps, constructing reports, LiDAR confidence ground and aerial, L-line, Crossing Inventory reports, and update Acquisition tracking. Review submittals, and shape files. Submitting deliverables via ProjectWise to BPA.
Monroe-Maple Valley R.O.S. (B.P.A.) $224k - Performed as Senior CAD, constructing reports, LiDAR confidence ground and aerial, L-line, Crossing Inventory reports. Reviewing Record-of-Survey.
Covington-Bettus R.O.S. (B.P.A.) $119k - Performed as Senior CAD, constructing reports, LiDAR confidence ground and aerial, L-line, Crossing Inventory reports. Reviewing Record-of-Survey.
McNary-John Day No.1 (B.P.A.) $518k Performed as Senior CAD constructing and review plan maps.
Central Ferry-Lower Monumental No. 1 $1.3M- Performed as Senior CAD, constructing new plan maps. Reviewing maps and Acquisition Documents.

CATEGORY OF EXPERIENCE

A. Route Surveying: 7 Years
Provided CAD support for several projects to include; state and county roads and highways, gas and pipe lines and BPA Transmission Lines.

B. Topographic Surveying: 18 Years
Provided CAD support for various topographic surveying projects to include; state and county roads and highways, gas and pipe lines and BPA Substation.

C. GPS Experience: 0 Years

D. Transmission Line Experience: 7 Years
Provided CAD support for various BPA projects to include; Transmission Lines new, rebuild and retracement.

E. Resource Grade GPS Experience: 4 Years
Used resource grade GPS in MicroStation for Access Road Surveys

F. Cadastral Experience: 0 Years
Provided CAD support on several BPA and private cadastral projects.

G. Legal Descriptions/Exhibit Prep: 7 Years
Developed and reviewed legal descriptions for access roads, land acquisition requests, approaches, and land disposal requests.

H. Survey Maps with MicroStation: 18 Years
Worked with agencies like BPA and ITD which has provided many opportunities to produce MicroStation deliverables for a variety of survey applications. Some of these include substation topo and retracement maps, plan and profile maps, hybridized plan and profile maps, Survey Base Maps for transmission lines, radio sites and access road acquisitions, exhibit maps for acquisitions, intelligent digital terrain models (DTM), shape files, roadway retracement and monumentation surveys, records of surveys, construction calculation maps and as-built maps.

Bruce L. Clark resume continued…

I. Survey Across Tribal/Sensitive Areas: 7 Years
Provided CAD support on projects that included many different types of public and private land ownerships such as Tribal Lands and lease acquisitions, Forest Service/BLM lands, Railroad rights-of-ways, water intake plants, treatment plants, energized areas, and wetland areas.

J. GIS Attribute Data Collection: 6 Years
Created GIS attribute for BPA using ArcMap and MicroStation for strip easements, Access Road, Land Acquisition easements, Approaches and other GIS DATA for BPA and other municipalities.

K. LiDAR Point Cloud Data: 6 Years
Has been working with LiDAR Point Cloud Data to perform verification for ground and aerial checks, crossing inventory and L-Line Reports.



Conrad J. Vogel | Land Survey Office Technician | Sandpoint, ID

EDUCATION

- General Studies, University of Idaho, Moscow, ID - 1989-1990
- Computer Science, University of Idaho, Moscow, ID - 1990-1992
- Computer Engineering, University of Idaho, Moscow, ID - 1992
- Minor, Civil Engineering, Math, University of Idaho, Moscow, ID - 1992-1993, 1995

CERTIFICATION/TRAINING

- Autodesk (DCA) Training Seminar - 1990
- MicroStation Training Seminar - 1991
- Systems Dividends Trimble GPS Certified Training - 2008

EXPERIENCE SUMMARY

Mr. Vogel has worked as CAD Operator/Designer for Ruen-Yeager & Associates' CAD and Survey department for the past **26 years**. Mr. Vogel works closely with BPA core team that we have at RYA to insure a high quality of project deliverables that meet BPA expectations. He provides QA/QC on mapping deliverables as well as oversight of production mapping. **He recently was responsible for preparation of base maps for the three recent projects from Hot Springs to Anaconda.** Mr. Vogel has a broad range of survey CAD experience including transmission line surveying and design, route location, boundary, topographical, construction and extensive cadastral surveys in Washington, Oregon and Idaho. In addition, Mr. Vogel is well versed in numerous computer software programs including but not limited to, MicroStation V8i, Bentley Descartes V8i, Bentley Inroads V8i, Bentley Inroads Survey V8i, Bentley Map V8i, Autodesk Infrastructure Suite, Word, and Excel. **Mr. Vogel has been providing his professional services on BPA projects since 1998.**

RECENT PROJECTS

Hot Springs-Rattlesnake (BPA) $310k - Senior CAD preparing the Survey Base Maps, and providing QA/QC of hybrid maps and acquisition exhibits.

Rattlesnake-Garrison (BPA) $129k - Senior CAD preparing the Survey Base Maps, and providing QA/QC of hybrid maps and acquisition exhibits.

Garrison-Anaconda No. 1 (BPA) $429k –Senior CAD preparing the Survey Base Maps, and providing QA/QC of hybrid maps and acquisition exhibits.

Kalispell-Kerr No. 1 (BPA) $498k –Senior CAD preparing the Survey Base Maps, and providing QA/QC of hybrid maps and acquisition exhibits.

Palisades-Swan Valley (BPA) $415k –Senior CAD providing QA/QC of Plan Line Maps and acquisition exhibits.

Bell-Boundary Fiber Optics (BPA) $490k –Senior CAD providing QA/QC of hybrid maps and acquisition exhibits.

Walla Walla-Tucannon River No. 1 (BPA) $1.2 M - Senior CAD preparing acquisition exhibits and performing QA/QC of hybrid plan maps.

Central Ferry-Lower Monumental No. 1 (BPA) $1.3M –Senior CAD preparing mapping hardshell, and providing QA/QC of new plan maps and acquisition exhibits.

McNary-John Day No. 1 (BPA) $518k – Corey's role was in Control Survey and Field Work, checking Field Notes/Documents, constructing Plan & Profile Line Maps, building the Survey hardshell maps.

Conrad J. Vogel resume continued…

CATEGORY OF EXPERIENCE

A. Route Surveying: 26 Years
Provided CAD support for various projects including: state and county roads and highways, gas and utility pipelines and BPA Transmission Lines.

B. Topographic Surveying: 26 Years
Provided CAD support for several topographic surveying projects to include; state and county roads and highways, gas and pipe lines and BPA Substations.

C. GPS Experience: 17 Year
Performed on large scale control projects using TBC adjustments, as well as field support control networks.

D. Transmission Line Experience: 25 Years
Provided CAD support for various BPA projects, including Field Note checking, confidence reports, Hardshell Profile maps, Plan and Profile Line maps, as well as field survey support.

E. Resource Grade GPS Experience: 12 Years
Performed on various projects utilizing resource grade GPS equipment including data collection for access roads and cadastral corner searches

F. Cadastral Experience: 25 Years
Performed on various BPA and private projects as a survey tech on cadastral surveys. Provide CAD support in preparation of ROS's on cadastral surveys.

G. Legal Descriptions/Exhibit Prep: 7 Years
Worked on multiple BPA projects involving acquisition. Tasks include reviewing/certifying title for LAR, LDR, and ARAR acquisition documents, preparing and marking up supporting documentation, and QA/QC of acquisition documents and exhibits prepared by others.

H. Survey Maps with MicroStation: 20 Years
Involved with numerous BPA projects in Oregon, Washington, Idaho and Montana that included substation topo and retracement maps, Plan and Profile Line Maps, Hybridized Maps, Survey Base Maps for Transmission Lines, Radio Sites and Access Road Acquisitions, Exhibit Maps for Acquisitions, Intelligent Digital Terrain Models (DTM), Roadway Retracement and Monumentation Surveys, Records of Surveys, Construction calculation maps and As-Built Maps. Conrad has been involved with creating GIS attributes for BPA using ArcMap and MicroStation.

I. Survey Across Tribal/Sensitive Areas: 25 Years
Involved with numerous BPA projects in Oregon, Washington, Idaho and Montana that have dealt with tribal and sensitive areas.

J. GIS Attribute Data Collection: 12 Years
Involved with creating GIS attribute data for BPA and private entities using ArcMap and MicroStation for strip easements for access roads, land acquisition easements, approaches and other GIS data for BPA and other municipalities.

K. LiDAR Point Cloud Data: 4 Years
Worked on multiple projects involving LiDAR data collection. Duties included evaluating the classified LiDAR data against the RTK/Conventional survey data for accuracy. Typical locations to verify would be substation deadend attachment points, tower centroids, and various hard surfaces throughout the transmission line right-of-way.



Don D. Crawford | Party Chief | Sandpoint, ID

EDUCATION

- Mathematics, Lewis & Clark State College, Lewiston, ID - 1977-1979
- Surveying, Flathead Valley Comm. College, Kalispell, MT - 1981
- Specialized Education Programs:
- International Correspondence School, Scranton, PA - 1995
- Math. of Surveying, North Idaho College, Coeur d'Alene, ID - 1985
- Introduction to AutoCAD, University of Idaho, Moscow, ID - 1991
- System Dividends, GPS Training, Michael McGinnis - 2008
- Trimble TBC, training - 2013
- AutoCAD in Surveying, Training - 2013

CERTIFICATION/TRAINING

- OPUS Projects Manager's Training – 2014, 2015
- Institutional Controls Program I.C.P. Certified
- Pediatric First Aid CPR AED Certified
- OSHA 1910.120 40hr Initial Training Course for Hazardous Waste Operations
- OSHA 1910.120 8hr Refresher Course

PROFESSIONAL AFFILIATIONS

- Vice-President, Noxon-Cabinet Shoreline Coalition
- Noxon Montana High School Basketball Coach (1998-2006)
- Noxon Montana American Legion Baseball Coach (2003-2006)

EXPERIENCE SUMMARY

Mr. Crawford has **33 years** of experience in field surveying and survey office support. He has served as party chief for over **20 years**. Mr. Crawford is an experienced surveyor in all aspects of BPA surveying including location, boundary, topographic, construcitno, control, acquisition, monitoring, and as-built surveys. His surveying capabilities also include: cadastral, storm sewers, sanitary sewers, water systems, various utilities, bridges, highways, roads, and airports. Mr. Crawford's experience includes a knowledge and proficiency of Trimble Business Center and provides office support to the PLS. **Mr. Crawford has been providing survey services on BPA projects since 1987.**

RECENT PROJECTS

Kalispell-Kerr No. 1 (BPA) $498k - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.
Bell-Boundary Fiber Optics (BPA) $490k - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.
Walla Walla-Tucannon River No. 1 (BPA) $1.2M - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.
Central Ferry-Lower Monumental No. 1 (BPA) $1.3M - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.
Garrison-Anaconda No. 1 (BPA) $429k - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.
Rattlesnake-Garrison No. 1 (BPA) $129k - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.

Don. D. Crawford resume continued…

Hot Springs-Rattlesnake No. 1 (BPA) $310k - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.
Colville-Republic No. 1 (BPA) $281k - Performed as Party Chief, Control Network, Route Survey and Field Work, Field Notes/Documents.

CATEGORY OF EXPERIENCE

A. Route Surveying: 25 Years
Performed route surveying for many BPA projects over the last 25 years, including substations, roads, transmission lines, topographic surveys, right-of-way acquisition surveys, and retraced right-of-way surveys.

B. Topographic Surveying: 25 Years
Performed on topographic surveys including substations, roadways, bridges, and municipal infrastructure. Clients include BPA, local municipalities, Idaho Department of Transportation, Design Build Transportation, and Private Developers.

C. GPS Experience: 15 Years
Performed on large scale control projects utilizing, preplanning and adjustments to major GPS static control networks, incorporating OPUS-projects manager adjustments, OPUS database use and TBC adjustments. Don has performed RTK/RTN surveying for all types of projects including construction, boundary, as-built and topographic surveying.

D. Transmission Line Experience: 28 Years
Performed as surveyor on BPA transmission line projects since 1987 including boundary and topographic location of proposed transmission lines. The data provided for the development of transmission line access road and easement legal descriptions.

E. Resource Grade GPS Experience: 22 Years
Performed on various projects utilizing resource grade GPS equipment including data collection for access roads, cadastral corner search, and mapping waypoints for "To Reaches" for project control points.

F. Cadastral Experience: 30 Years
Performed on multiple cadastral surveys as part of many types of BPA projects over the years including USFS, BLM, Department of Lands, substation surveys, radio site surveys, highway/road retracement surveys and private boundary surveys, land development projects and subdivision of section surveys.

G. Legal Descriptions/Exhibit Prep: 15 Years
Worked on many types of legal descriptions and exhibit maps, including BPA A-tracts, additional width tracts, access road acquisitions, Radio Site acquisitions, Land Disposal Requests, Superseded tracts, utility and slope easements, highway/roadway strip descriptions for right-of-way and easement acquisitions, private access easements, property line adjustment descriptions, vesting deed descriptions and land development related descriptions.

H. Survey Maps with MicroStation: 5 Years
Has used MicroStation / InRoads for importing survey data.

I. Survey Across Tribal/Sensitive Areas: 20 Years
Extensive experience with working on cultural and environmentally sensitive areas and has experience with the process and protocol of working on these sites.

Don. D. Crawford resume continued…

J. GIS Attribute Data Collection: 10 Years
Involved in attributed data collection for the last 10 years, including Level (3) fiber optic location and attributes collection, high accuracy attributed data collection of BPA Radio inventory project, attributed data collection for BPA access road survey and survey grade attributed collection for surveying applications like topographic surveys, retracements and boundary surveys.

K. LiDAR Point Cloud Data: 5 Years
Working with LiDAR data more frequently in the last 5 years. Don's representative experience includes the review and/or extraction of LiDAR data performed for crossing inventories, data checks, beam path profiles/tree heights, mobile scan data for roadway projects, plan and profile hybridizations.



James T. Cheslic | Party Chief | Sandpoint, ID

EDUCATION

- US Navy 1995-1998 Honorable discharge
- Letter of Accommodation from Rear Admiral
- National Defense Medal
- Armed Forces Expeditionary Medals
- Sea Service Medals
- Aircraft Landing Signalmen
- Basic Fire Fighting
- Advance Aircraft Fire Fighting
- Ordinance/Hazmat Fire Fighting
- Combat First Aid

CERTIFICATION/TRAINING

- System Dividends, GPS Training, Michael McGinnis - 2008
- Institutional Controls Program I.C.P. Certified
- Pediatric First Aid CPR AED Certified
- OSHA 1910.120 40hr Initial Training Course for Hazardous Waste Operations
- OSHA 1910.120 8hr Refresher Course

EXPERIENCE SUMMARY

Mr. Cheslic has **18 years** of experience in surveying. His surveying experience includes: subdivisions, boundaries, topography, cadastrals, roads, PUD's, and Indian reservation boundaries. Mr. Cheslic' s experience with Bonneville Power Administration includes: transmission lines, substations, access roads, property encroachments, upgrades, fiber optic, microwave and radio repeater sites, aerial panels for photogrammetry and LiDAR, Pathfinder locations for access roads. Mr. Cheslic has also provided services as Party Chief directly with BPA Surveyors Rick Tieper and Steve Long on project specific tasks. **Mr. Cheslic has been providing survey services on BPA projects since 1999.**

RECENT PROJECTS

Monroe-Maple Valley R.O.S. (B.P.A.) $224k - Performed as a Party Chief on the project including locating the original centerline, as-build existing towers, locate section and property corners, monument centerline and post right-of-way. Work was completed using both conventional methods and RTK with WSRN networks.

Covington-Bettus R.O.S. (B.P.A.) $119k - Performed as a Party Chief on the project including locating the original centerline, as-build existing towers and SSDE, locate section and property corners, monument centerline and post right-of-way. Work was completed using both conventional methods and RTK with WSRN networks.

Kalispell-Kerr No. 1 (BPA) $498k - Performed as Party Chief for LiDAR verification and establishing GPS control.

Garrison-Anaconda No. 1 (BPA) $429k - Performed as Party Chief and a Survey Technician on this phase of the project.

Rattlesnake-Garrison No. 1 (BPA) $129k - Performed as a Survey Technician on this phase of the project.

Hot Springs-Rattlesnake No. 1 (BPA) $310k - Performed as Party Chief and a Survey Technician on this phase of the project.

James T. Cheslic resume continued…

Central Ferry-Lower Monumental No. 1 (BPA) $1.3M – Resource grade GPS surveys of access roads.
McNary-John Day No. 1 (BPA) $518k – Performed as Party Chief performing tower site studies and staking towers.

CATEGORY OF EXPERIENCE

A. Route Surveying: 15 Years
Performed multiple surveying duties on various projects to include; state and county roads, highways, railroads, gas pipe lines, and BPA Transmission lines. This work included field staking, alignment staking and transmission tower staking.

B. Topographic Surveying: 15 Years
Performed all field duties for topographic surveys of; new and existing substations, roads, bridges, site development and river bathymetric.

C. GPS Experience: 15 Years
Performed all field duties for large scalestatic control networks, RTK topos, monument ties and staking, road alignment staking and transmission tower staking.

D. Transmission Line Experience: 16 Years
Performed as a field surveyor on BPA transmission line projects since 1999 including boundary and topographic location of proposed transmission lines. JT has performed all field survey duties for survey of new and existing transmission line structures and foreign crossings, both overhead and buried.

E. Resource Grade GPS Experience: 7 Years
Performed all field survey duties related with the data collection and processing of field data to aid in access road acquisitions and existing access road data base.

F. Cadastral Experience: 17 Years
Performed all field survey duties on cadastral projects in Idaho, Washington, Wyoming and Oregon for state, Federal lands and private timber companies. Tasks include search for original GLO, monument ties and staking, creating and or protecting rp's and marking boundary lines.

G. Legal Descriptions/Exhibit Prep: 0 Years

H. Survey Maps with MicroStation: 0 Years

I. Survey Across Tribal/Sensitive Areas: 17 Years
Performed field duties on BPA projects in Eastern Washington and Western Montana as well as cadastral surveys on multiple reservations, BLM, DNR, and USFS lands, in multiple states.

J. GIS Attribute Data Collection: 7 Years
Collected and processed field data to aid in creating and updating GIS data base for TLM (Tower Line Maintenance) crews.

K. LiDAR Point Cloud Data: 0 Years



F. David Higgins | Survey Technician/Party Chief | Sandpoint, ID

CERTIFICATION/TRAINING

- Institutional Controls Program I.C.P. Certified
- Pediatric First Aid CPR AED Certified
- OSHA 1910.120 40hr Initial Training Course for Hazardous Waste Operations
- OSHA 1910.120 8hr Refresher Course

EXPERIENCE SUMMARY

Mr. Higgins has **38 years** of experience in surveying. His surveying experience includes: topography, cadastral surveys, boundaries, bike paths, construction sites, subdivisions, storm sewers, sanitary sewers, waterlines, utilities, bridges, schools, highways, roads, airports, A.L.T.A. surveys and legal descriptions. Mr. Higgins' experience with Bonneville Power Administration includes: transmission lines, substations, access roads, property encroachments, upgrades, fiber optic, microwave and radio repeater sites, aerial panels for photogrammetry ties, LiDAR, and Pathfinder locations for access roads. **Mr. Higgins has been providing survey technician services on BPA projects for over 25 years.** Mr. Higgins serves as a Party Chief for RYA survey crews for commercial construction, cadastral and topographic surveys. With his survey experience on BPA projects, RYA anticipates the opportunity to provide internal RYA training to assume BPA Party Chief responsibilities.



Brent G. Gruenhagen | Survey Technician/Party Chief | Coeur d'Alene, ID

EDUCATION

- AAS Degree, Civil Engineering, Spokane Community College - 1994
- AA Degree, General Studies, Spokane Falls Community College – 1992

CERTIFICATION/TRAINING

- OSHA 1910.120 40hr Initial Training Course for Hazardous Waste Operations
- Institutional Controls Program I.C.P. Certified
- Pediatric First Aid CPR AED Certified

EXPERIENCE SUMMARY

Mr. Gruenhagen has **18 years** of surveying experience. He has worked on projects from northern Idaho to western Washington Seattle/Tacoma area. Mr. Gruenhagen's experience with Bonneville Power Administration includes: CL Survey Monuments from Tacoma to Grand Coulee, Monroe to Maple Valley. He is a very meticulous, organized and thorough surveyor. His follow through allows for a more efficient and cost effective project. Mr. Gruenhagen is well versed in using Trimble surveying equipment and instruments. Mr. Gruenhagen serves as Party Chief for RYA survey crews for construction, boundary, and topographic surveys. He has worked on BPA survey crews for two (2) years. Brent will follow the internal RYA training process to transition into a Party Chief role on BPA work assignments.

Boundary and Topographic Survey for existing heavily wooded Substation Parcel in dgn format. *(Amendment 3 clarified this approach as "A Boundary and Topographic Survey for an expansion of an existing BPA substation on to an adjacent heavily wooded BPA fee owned parcel that is not physically delineated and monumented")*

Office - Project Surveyor/Land Survey Office Technician

- Review Work Assignment and determine deliverables, schedules, and staffing requirements.
- Obtain record boundary documents from BPA and/or additional research for adjacent parcels.
- Verify appropriate horizontal and vertical datum's as instructed in the work assignment.
- Obtain and review Permission to Enter Property documents (PEP's)
- Review all BPA provided documents such as Plan & Profile maps, Geodetic Control Data Sheets, etc.

Field – Survey Party Chief/Survey Technician

Survey Equipment – (1) M3 Total Station / (1) TSC3 Controller / (1) R10 Base/Rover Pair

Control – Project control will be established by using the existing baseline monumentation.

Establishing new baseline and parcel monuments – RYA will recover existing substation baseline monuments. Set new topographic baseline monuments for adjacent parcel per direction from the BPA Project Surveyor and/or the project Work Assignment. Topographic baselines are typically aligned parallel and perpendicular to existing substation baselines. Monuments will be set to the North, South, East, and West and at the baseline intersection with a standard BPA aluminum cap set in concrete. A cadastral survey will be performed and controlling corners will be tied to determine calculated corners of the adjacent BPA fee owned parcel. Boundary monuments will ultimately be established and set for new parcel corners.

Topographic Survey - Typically, a grid spacing pattern of 25' will be established parallel and perpendicular to the newly created topographic baseline. Additionally, data will be collected for all break lines and any other ground features to represent an accurate DTM model. Additional topographic details will be documented in the note sheets as peg notes and detailed sketches.

Methods of Survey – For the heavily wooded parcel, optical survey methods will be incorporated. Baseline monuments will be traversed through and closed out. A traverse will be established that sets an adequate number of control points to allow coverage of the site. All topo shots will be taken with an M3-Trimble total station with data being recorded in TSC3 Data Collectors. A back sight check will be performed after approximately 50 topo shots. Instrument angle will be reset to 0°00'00".

Outside of the heavily wooded parcel, GPS/RTK survey methods will be utilized provided industry standard procedures for static and RTK observations can be met. Baseline monuments and cadastral corner ties will be measured as observed control (120 epochs). All other points will be measured as topographic points (3-5 epochs). Check measurements to control monuments will be taken after approximately 50 topo shots to verify initialization.

The most current BPA feature code list and attribute library will be utilized for all data collection.

Office – Project Surveyor/ Land Survey Office Technician

Record of Survey – A record of survey of the substation expansion will be prepared and submitted to BPA for approval. Once approved, the record of survey will then be recorded with the appropriate agency (County/City municipality).

Mapping Tasks

- Import survey data into a MicroStation V8i dgn format using Inroads V8i.
- Create dtm and topographic line work using current BPA Inroads preference file.
- Once the drawings are completed, the Land Survey Office Technician will review the drawings to insure compliance with the statement of work and BPA Acquisition and Mapping manual.
- When the drawings have passed this step the Project Surveyor will perform QA/QC.
- After QA/QC has been completed, drawings will be sent to the BPA Project Surveyor for review.
- After BPA has completed its review and changes from the BPA Project Surveyor have been completed, this project is ready for submittal.
- Refer to the Statement of Work and BPA Acquisition and Mapping manual for the items to be submitted.

QA/QC

- Red-check and inventory of Field Notes
- Checklist of expected and discovered feature ties
- Boundary Determination Report
- Exhibit Preparation

Survey Deliverables

- Copy of red checked note sheets
- Consecutive Field Note Index (CFNI)
- Electronic data including
    1. Data collector files
    2. Trimble Business Center (TBC) files
    3. CSV Point files
    4. Media files
    5. MicroStation dgn file

Stake Transmission structures for construction.

There are numerous types of structures within BPA's system including two pole wood, three pole wood, lattice steel, rotated steel tangent and angle point, and square steel tangent and angle point, to name a few. This technical approach describes the procedure that Ruen-Yeager & Associates, Inc. utilizes for staking a square steel tangent structure (POT). This approach assumes that tower centers and POT monuments have been previously established.

RYA's Project Surveyor will notify BPA Inspector/Project Surveyor immediately if any field conditions differ from design.

Office - Land Survey Office Technician

Office Software – Trimble Business Center v3.61

Review Work Assignment and determine deliverables, schedules, and staffing requirements.

Obtain the following BPA furnished documents and prepare staking package for survey crew:

- Plan & Profile Maps
- Tower Site Data Sheets
- POT-BM List
- Steel Tower List
- Structure Typicals
- L-Line Report
- Footing Plans
- Permission to Enter Property documents (PEP's)

Field – Survey Party Chief/Survey Technician

Survey Equipment – (1) Trimble TSC3 Controller/ (1) Trimble M3 Total Station

Occupy Tower Center monument; Check to POT or Tower Center monuments ahead and back on line for stationing, elevation, and tangent line accuracy. Once these checks have been completed, set and store positions for all pit centers and Reference Point hubs and tacks from the occupied Tower Center using the following procedures:
Leg A pit center will be established by zeroing in on ahead tangent and turning a 45° horizontal angle to the left and setting a hub and tack at the given "C" dimension as shown on the footing plans. An interior Reference Point is then set along the tower leg line at a horizontal offset distance to the centerline of footing that best fits the field conditions. An exterior Reference Point is then set along the tower leg line extended at a horizontal offset distance to the pit center that best fits the field conditions.

Leg B centerline of footing is then set by sighting Leg A pit center hub and tack and resetting the instrument angle to 0°00’00” then turning a 90° angle to the right. The pit center hub and tack is set at the “C” dimension as shown on the footing plans. An interior Reference Point is then set along the tower leg line at a horizontal offset distance to the pit center that best fits the field conditions.

Leg C pit center is then set by turning a 180° angle to the right. The pit center hub and tack is set at the “C” dimension as shown on the footing plans. An interior Reference Point is then set along the tower leg line at a horizontal offset distance to the pit center that best fits the field conditions. An exterior Reference Point is then set along the tower leg line extended at a horizontal offset distance to the pit center that best fits the field conditions.

Leg D pit center is then set by turning a 270° angle to the right. The pit center hub and tack is set at the “C” dimension as shown on the footing plans. An interior Reference Point is then set along the tower leg line at a horizontal offset distance to the centerline of footing that best fits the field conditions. Then turn instrument angle back to Leg A centerline of footing hub and tack to verify angular accuracy (closed horizontal circle angle should be 0°00'00").

Once all required pit centers and Reference Points have been set, cuts to the bottom of footing will be calculated. Using the Tower Site Data Sheets and the footing plans, the bottom of footing elevations will be derived. Then cuts from the Reference Point hubs to the bottom of footing will be calculated and marked on the Reference Point stakes. All surveyed and design dimensions, elevations, and calculations will be clearly illustrated on the note sheets.

A field check of the staking is performed by continuing to occupy the Tower Center, zeroing the instrument on the POT Monument ahead, then turning a series of angles and checking distance as follows.

1. Turn ANGLE RIGHT, 45° to Leg B and sight the pit center hub and tack. Verify angular accuracy and the “C” dimension to centerline of footing as shown on the footing plans.
2. Turn ANGLE RIGHT, 135° to Leg C and sight the pit center hub and tack. Verify angular accuracy and the “C” dimension to pit center as shown on the footing plans.
3. Turn ANGLE RIGHT, 225° to Leg D and sight the pit center hub and tack. Verify angular accuracy and the “C” dimension to pit center as shown on the footing plans.
4. Turn ANGLE RIGHT, 315° to Leg A and sight the pit center hub and tack. Verify angular accuracy and the “C” dimension to pit center as shown on the footing plans.

5. Turn ANGLE RIGHT, 360° to POT Monument ahead (closed horizontal circle angle should be 0°00'00").
6. The Survey Technician operating the instrument will confirm the angular closure, and report to the Party Chief for confirmation.

An independent field check of the Reference Points will be performed as follows:

1. Occupy Leg A pit center hub and tack. Zero instrument and perform back sight check to Tower Center monument. Store position and record results.
2. Tie all Reference Points from this instrument setup. Store positions as check shots and record elevations.
3. Verify that hub elevations of all Reference Points have been checked for accuracy.
4. Cuts to bottom of footing will be re-checked for all Reference Point hubs.

Field Notes will be red checked.

Photographs will be taken of the completed staking.

Deliverable

- Copy of red checked note sheets
- Consecutive Field Note Index (CFNI)
- Supporting documentation used to stake structures
- Electronic data including
    1. Data collector files
    2. Trimble Business Center (TBC) files
    3. CSV Point files
    4. Photographs

Staking for earthwork to address an impairment to a transmission line.

The following technical approach assumes that an impairment has been identified but the extent (size) of the impairment needs to be determined in the field prior to staking the earthwork that needs to be removed.

Office – Project Surveyor, Land Survey Office Technician

Review Work Assignment
Determine Deliverables/Schedule/Staffing Requirements
Obtain the following BPA furnished documents and / or information and prepare package for survey crew:

- Impairment location
- Tower Working Point Elevations
- Plan & Profile Maps
- POT-BM List
- Structure List
- Permission to Enter Property Documents (PEP's)

Field – Survey Party Chief / Survey Technician
Survey Equipment – (1) Trimble TSC3 Controller / (1) Trimble M3 Total Station / (1) Trimble DiNi Electronic Level

Checks and centerline profile – RYA will occupy the back tower center of impairment span and tie tower center of ahead structure for span distance and elevation checks (tower center elevations may need to be established from bench levels from working points to tower center on both towers). Then set hub and tack on centerline at given station of impairment. We will move the instrument from back tower structure center to occupy set hub and tack impairment station and sight ahead to tower center to verify correct station and elevation of occupied impairment location. A profile survey will be run back and ahead along centerline at distances that clearly extending beyond the impairment.

Cross section profile at impairment station – While still occupying impairment station hub and tack, sight ahead to tower center and reset instrument angle to 0°00'00". Depending on direction of high side, turn an angle of 90° or 270°. Profile cross section at intervals and at ground breaks including shots under outside conductor. Extend to one shot beyond right-of-way.

Wire Studies – Set two hub and tacks (A and B) approximately five feet apart along cross section line at distances appropriate for conducting a wire study. Occupy hub A and back sight impairment station hub and tack, then tie (reflectorless) conductors A, B, and C. Repeat procedure at hub B. Record both sets of reflectorless measurements to all three conductors in note sheets. Check between the two sets of data to confirm acceptable tolerances.

Additional Topographic Survey – An additional topographic survey can be performed if ground is deemed irregular or may present problem around said impairment.

Field Staking - Once the high side cross section survey is completed the extent of the impairment can be established in the field. The RYA field crews would then set stakes to outline the limits of the impairment. The field crews would then set a grid of cut stakes (25 foot grid) within the limits of the impairment to document the required earthwork cuts to eliminate the existing impairment. Photograph limits of impairment.

Deliverables

- Red Checked Field Notes
- Consecutive Field Note Index (CFNI)
- Photographs
- Electronic Data Including
  1. Data collector files
  2. Trimble Business Center (TBC) files
  3. CSV Point files

Preparing strip legal descriptions and narratives with exhibits from survey data, deeds, and title reports.

- Project Team Meeting – Survey Manager, Project Surveyor, Land Survey Office Techncian
- Review Work Assignment
- Review current BPA Acquisition Manual
- Confirm Schedule
- Confirm Deliverables
- Assess Staffing Needs
- Equipment Needs – Pathfinder; Pathfinder Office for Survey Data

1. Title Certification – Project Surveyor
   - Review Title Commitment for readability and accuracy.
   - Mark up Title Commitment for information that is important to the easement.
   - Develop narrative: Information in the narrative should include Project Name, Tract Number, land owner's complete name as it appears on title, Title policy number, Title Company, effective date, Title Report showing location of the easement, how the pertinent parcel line locations were determined, and any additional comments or issues found in developing the easement. Narrative should be clear and concise to help QA/QC review and approve the easement.
   - Notify BPA's Project Acquisition Land Surveyor and/or COTR immediately if any discrepancies or issues arise that could potentially impact the deliverable dates.
2. Document Preparation – Land Survey Office Technician
   - Prepare exhibits using Bentley MicroStation V8i and legal descriptions per the standards contained in the current BPA Acquisition Manual.
   - Create sketches, markup record information and original BPA maps to help QA/QC review the easement.
   - Update narrative if issues were found during document preparation.
   - Add easement information to BPA maps.
   - Use check list in preparation of easement documents.
   - Survey Base Map and exhibit to be updated with any survey data pertinent to acquisition.
3. Easement and Document Review - Land Survey Office Technician
   - Use the checklist for review of easement documents.
   - Legal description should match exhibit, title certification and updated BPA Map.
   - Exhibit should match legal description, title certification and updated BPA Map.
   - BPA Map should match exhibit, legal description and title certification.
   - Review Narrative.
   - Open CAD files and check for errors, i.e. Review stations and survey lengths.
   - Once easement has passed this review, easement is ready for shape file creation using Bentley Map and QA/QC.

4. QA/QC of Easement – Project Surveyor
   - Complete check list.
   - Legal description should match exhibit, title certification and updated BPA Map.
   - Exhibit should match legal description, title certification and updated BPA Map.
   - BPA Map should match exhibit, legal description and title certification.
   - Review Narrative.

5. Shape File Review – Land Survey Office Technician
   - Review shape file using ArcMap.
   - Compare shape file to exhibit.

6. Submittal of Easement – Land Survey Office Technician, Project Surveyor
   - Consult the current BPA Acquisition Manual before submitting easements to ensure that the easement documents are not rejected by BPA
   - Check list required for submittals.

Updating Plan and Profile maps from a base map dgn file.

1. Project Team Meeting – Survey Manager, Land Survey Office Technician
   - Review Work Assignment for mapping task.
   - Confirm Deliverables dates
   - Assess Staffing Needs
   - Equipment Needs – Bentley MicroStation V8i / Bentley Descartes V8i

2. Update Plan & Profile Maps – Land Survey Office Technician, Drafter/CAD Operator II
   - Update the maps, per the standards contained in the current BPA Acquisition Manual
   - This should be done using Bentley MicroStation V8i / Bentley Descartes V8i
   - Frequent communication with the BPA Mapper to insure the work is being done correctly
   - Plot maps full size and use the plan or profile check list for map review.
   - Initial the plan and profile check lists and send to QA/QC.
   - Send a sampling of completed maps (5-10) to the BPA Project Mapper for review to verify mapping processes are clearly understood.

3. QA/QC of Plan and Profile Maps – Land Survey Office Technician
   - QA/QC will be provided by qualified personnel familiar with current BPA CAD Standards who were not involved in the preparation of the plan and profile maps.
   - Maps to be checked using the current BPA Acquisition Manual.
   - QA/QC shall utilize the check lists for plan and profile maps
   - All red checked maps should remain in checkers possession until project completion.

4. Deliverables to BPA – Land Survey Office Technician
   - Submit completed dgns.
   - Submit check lists
   - Submit full size maps

Establishing and evaluating horizontal and vertical Control.

Office - Survey Manager/Project Surveyor/Land Survey Office Technician

Field – Survey Party Chief/Survey Technician

Survey Equipment – (3) Trimble R10 GNSS Receivers/ (1) Trimble R8 GNSS Receiver/ (4) Trimble TSC3 Controllers

Office Software – Trimble Business Center v3.61

A typical project control scenario for a given Work Assignment would require an OPUS-Projects network solution (OP), with primary static control points set along a corridor spaced at intervals appropriate for future RTK surveys. The following will be considered by RYA when pre-planning a primary control network of this type:

1. Terrain, canopy, and vegetation should be taken into consideration when pre-planning the ideal locations for primary control monuments.
2. Access to primary control points. What are the conditions of the access roads/routes? Will bad weather adversely impact travel times to and from control points? Utilize PEP's (Permission to Enter Property documents) and/or Conversation Records when available for access outside of the BPA Right-of-Way.
3. Occupation times for static data shall be a minimum of two hours per OPUS requirements, with an overlap of at least thirty minutes for adjacent control point observations. Approximately one third of the project control will require secondary observations.
4. Control point spacing is established to provide sufficient overlap to adjacent control points in all directions when performing future RTK surveys.
5. Consider setting control near any specific areas called out in the Work Assignment such as critical crossings, substations, etc.

RYA Project Surveyor will prepare a control plan including a KMZ file (Google Earth) of the proposed locations of the primary control monuments along with a spreadsheet illustrating the occupation times and sequence of observations. The control plan will be submitted to the BPA Project Surveyor for final approval before field surveying activities take place.

Primary control monuments will be established by setting 3-1/4" diameter BPA aluminum caps in concrete with carsonite posts for all primary control points. Photographs will be taken of all control points.

Static GPS observations of the Project Control Points will be post-processed in OPUS-Projects (OP) by RYA's Project Surveyor and/or Land Survey Office Technician. The tolerance settings will be based upon the Work Assignment requirements. CORS data,

added to the project, provides alignment to an accurate reference frame (i.e. NAD83) and improves heights. In conjunction with OP Session and Network Solution Summaries, the Processing Results Plots and Tables are critical tools used to evaluate and analyze the "success" of project solutions.

A Geodetic Control Report will be prepared and submitted to BPA.

Geodetic Data Sheets shall be prepared and submitted to BPA for each primary control point.

If LiDAR data is available, RYA's Party Chief and Survey Technician will verify that the horizontal and vertical datum's match at specified locations, such as the attachment points at the substation dead-end structures (SSDE).

Survey deliverable package for control will include PDF copies of the Field Notes, electronic data, and OPUS Reports.

RYA's Project Surveyor will coordinate day to day survey activities with the BPA Project Surveyor. All surveying tasks shall be in accordance with the most current version of the BPA Surveying Manual.

Deliverables

- Geodetic Control Report
- Geodetic Data Sheets
- Copy of red checked note sheets
- Photographs
- Consecutive Field Note Index (CFNI)
- Electronic data including
    1. GPS Static data files
    2. OPUS Project Reports
    3. CSV Point files

Effectively integrate new, under experienced, and under trained employees into billable roles.

In order to effectively integrate new, under experienced and under trained employees into billable roles, RYA's Survey Manager must take a strategic look at key upcoming projects in which the new employee may be teamed with a BPA experienced and knowledgeable mentor in order to gain exposure and experience in the areas deemed appropriate for training. Through a shadowing effort, the employee can be exposed to the proper BPA procedures and standards and begin to learn how to effectively and efficiently perform the role intended. As knowledge is gained, the employee will be given tasks to perform independently, with close supervision by a RYA mentor experienced in BPA standards, with increasing frequency, complicity, and independence as experience is gained. As the employee moves into a role of independent BPA performance, opportunities will be sought to provide additional specialized training through either BPA training offers or internal RYA training.

Preparing Field Notes in support of digital data collection.

Field Note Preparation - Party Chief

Field Notes should support the raw data and clearly establish the intent of the survey. In addition to organizing efficient field production, the field note ultimately establishes a method of cross checking the digital data where human entry is incorporated and clearly identifies the method of data collection and accuracy of the results. Notation of details during the survey guarantees that the critical aspects of measurements have been observed during the time of data collection.

1. BPA Note Sheet Completion - In addition to filling in the blank fields of the BPA note sheets, all note sheets should include:
   - The equipment used with serial numbers of equipment
   - File names of .job and linked files
   - Point ranges used
   - Separate photo files or linked media files

2. Document Individual Point Records (dependent upon the type of survey).
   Secondary RTK Control (observed control points) list:
   - Point, feature code and attribute info
   - Antenna height and reference mark
   - Number of epochs to derive the solution
   - Precision of the point solution
   - Check shot comparisons
   - Record horizontal and vertical deltas

Topo point Field Notes are less detailed in the nature of precisions and epochs because it can be assumed that settings will eliminate the potential to store data that is out of the specified precision tolerance. By listing antenna height and reference mark, together with point number and feature code details, the human input factor can be cross-checked.

3. Document conventional Field Notes
   - List setup details
   - List rod or reflectorless details
   - Check shot comparisons to established points, and feature details

4. Document sketches in note sheets
   - Include labels of point numbers and orientation features (i.e. direction and location of roads, fences, and foreign crossings)
   - Identify and label structure IDs
   - Document pertinent measurement and stationing information

Processing field data.

Land Survey Office Technician

If control has been previously established for a project, the control values are seeded as Control Quality in Trimble Business Center (TBC) from existing BPA Geodetic Data Sheets that define the horizontal datum, vertical datum, geoid model, and linear units.

If the project requires new control to be established through OPUS-Projects, the static GPS data collected in the field will be downloaded and converted to Rinex files, which will then be imported into OPUS-Projects for a final network adjustment per the given Work Assignments horizontal and vertical datum's, and unit parameters. The adjusted control values can then be imported into TBC.

Field Notes are red checked/edited in conjunction with data processing.

Processing of RTK and conventional data

Office Software – Trimble Business Center v3.61

- Import data collector files (Job/DC) into Trimble Business Center (TBC) holding the existing coordinate systems project definition as defined above.
- If any flags or warnings are present, address each one as deemed necessary.
- For RTK data, verify that the antenna's and antenna heights at the base and rover are correct, and that the antenna measure up references are correct (Center of Bumper, Bottom of Antenna Mount).
- For conventional data, verify instrument setups and rod heights are correct using the Optical Spreadsheet report in TBC.
- For RTK data, verify point precisions and inverses using the Point Derivation Report in TBC.
- Verify that the stored check shots to control points are within acceptable horizontal and vertical tolerances to record values.
- Verify point ID's for correctness against Field Notes.
- Check/edit BPA feature codes and descriptions for correctness against Field Notes.
- Process feature codes.
- Check/verify any media files against Field Notes.
- Check/verify that collected data fits BPA mile map information and/or any design calculations, if applicable.
- Finally, export a survey point file (.txt or .csv) for import into MicroStation.

Field verify airborne LiDAR data horizontally and vertically along a 25 mile portion of transmission corridor.

1. Project Team Meeting – Project Surveyor, Land Survey Office Technician, Party Chief
   - Review Work Assignment
   - Confirm Schedule
   - Confirm Deliverables
   - Assess Staffing Needs
   - Software Needs – MicroStation V8i
   - Survey Equipment – (1) M3 Total Station/(1) TSC3 Controller/(1) R10 Base/Rover Pair
2. Establish Control – Party Chief, Survey Technician
   - Recover LiDAR control monuments at substation and along the alignment.
   - Establish additional control points if needed.
   - See Project Statement of Work for horizontal and vertical datum and adjustments
3. LiDAR Retracement Report – Land Survey Office Technician, Project Surveyor
   - Insert LiDAR data into drawing using MicroStation V8i.
   - Verify Tower Centers from LiDAR centroids.
   - Create L-Line retracement report using the current Alignment Report template.
   - Develop using structure centroids from LiDAR data and compare to record acquisition plan map data.
   - If the centroids are in error or have an offset to the survey line, use structure legs to create an actual point that represents tower center.
   - Deliverable will be a .csv point list of all tower center and survey line points.
4. Drive the transmission corridor – Party Chief
   - Use the BPA approved L-Line Retracement Report and drive the transmission corridor with a laptop using MicroStation V8i with LiDAR data inserted into the drawing to verify that all crossing and design impairment features (crossing aerial utilities, structures, railroads, canals, rivers, county roads and state highways) are clearly represented in the LiDAR data and shown on the original plan/profile maps.
   - Identify which features that need to be located to supplement the LiDAR model.
   - Identify what features will require changes and additions to the plan and profiles.
   - Redline plan and profile maps.
   - Identify potential areas where additional LiDAR confidence check shots may be necessary to confirm LiDAR ground due to thick vegetation.
5. LiDAR Confidence Checks Field Verify – Party Chief, Survey Technician
   Ground: Field checks to verify the accuracy of LiDAR data.
   - Survey verification shots (ground) at approximate 5 mile intervals throughout this 25 mile project. (6 locations)

Aerial: Field checks to verify the accuracy of LiDAR data.

- Survey verification shots (aerial) at approximate 5 mile intervals throughout the 25 mile project. (6 locations)

6. LiDAR Confidence Report – Land Survey Office Technician
   - Create a dtm from LiDAR ground data within Bentley Inroads.
   - Import the ground field survey data.
   - Run Surface confidence report in Inroads.
   - Place the data into the current BPA LiDAR Confidence Report template.
   - Run macro within the template.

7. LiDAR Field Verification Report – Land Survey Office Technician
   - Develop report based on LiDAR data and aerial survey data.
   - Report should show the difference between Distance, Northing, Easting and Elevation.

8. QA/QC – Project Surveyor

9. Deliverables - Land Survey Office Technician
   - LiDAR Retracement Report
   - LiDAR Field Verification Report
   - LiDAR Confidence Report
   - Redline Plan and Profile maps
   - Copy of red checked note sheets
   - Consecutive Field Note Index (CFNI)
   - Electronic data including
     1. Data collector files
     2. Trimble Business Center (TBC) files
     3. .csv Point files

3. Equipment

RYA presents the following “Equipment” worksheet which lists the equipment that will be utilized for this contract. The list includes the brands and model numbers, as well as the office location and quantity of each.

RUEN-YEAGER & ASSCOCIATES, INC.

TECHNICAL/MANAGEMENT PROPOSAL
ITEM #3: EQUIPMENT

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)									
	BENTLEY MICROSTATION V8i	BENTLEY MAP V8i	BENTLEY POWER INROADS V8i	BENTLEY INROADS V8i	BENTLEY INROADS SURVEY V8i	BENTLEY DESCARTES V8i	AUTODESK INFRASTRUCTURE SUITE	ESRI ARC MAP 10.3	TBC LICENSE VERSION 3.61	TRIMBLE PATHFINDER OFFICE
Sandpoint, Idaho	*2*	*1*	*1*	*1*	*1*	*1*	*2*	*1*	*2*	*1*
Coeur d'Alene, Idaho	*2*	*1*	*0*	*1*	*0*	*0*	*2*	*1*	*1*	*0*

RUEN-YEAGER & ASSCOCIATES, INC.

TECHNICAL/MANAGEMENT PROPOSAL
ITEM #3: EQUIPMENT

OFFICE LOCATION(S) (City, State)	EQUIPMENT (Indicate Quantity)							
	DATA COLLECTORS WITH TRIMBLE ACCESS	GPS RTK RECEIVER PAIR	3" TOTAL STATION WITH LONG RANGE REFLECTORLESS	GPS RTN RECEIVER WSRN	GPS STATIC RECEIVER	RESOURCE GRADE GPS SYSTEMS	DIGITAL OR AUTOMATIC LEVELS	W.S.R.N. LIC. W/MIFI AND/OR CELL PHONE CAPABILITY
Sandpoint, Idaho	*(1)Trimble TSC3 Controller with Access Version 2015.21*	*(1)Trimble R10 GNSS Receivers, Base & Rover Capable* *(1) Trimble R8 GNSS Model 3 Reciever Base & Rover*	*(1)Trimble M3 Total Stations w/Reflectorless Functions*	*(2) Trimble R10 GNSS Receivers, Base & Rover Capable* *(1) Trimble R8 GNSS Model 3 Reciever Base & Rover*	*(2) Trimble R10 GNSS Receivers, Base & Rover Capable* *(1) Trimble R8 GNSS Model 3 Reciever Base & Rover* *(1) Trimble R8 Model 1 Receiver Rover* *(2) Trimble 5700 GPS Receivers*	*(1) Trimble GEO 7X Handheld*	*(1) Trimble DiNi Electronic Digital Level* *(3) Topcon/ Sokkia Auto Levels*	*4*
Coeur d'Alene, Idaho	*(1)Trimble TSC3 Controller with Access Version 2015.21*	*(1) Trimble R8 GNSS Model 2 Receiver Baes & Rover* *(1) Trimble R8 GNSS Model 2 Receiver Rover*	*(1)Trimble M3 Total Stations w/Reflectorless Functions*	*(1) Trimble R8 GNSS Model 2 Receiver Baes & Rover*	*(1) Trimble R8 GNSS Model 2 Reciever Base & Rover* *(1) Trimble R8 Model 1 Receiver Rover* *(2) Trimble 5700 GPS Receivers*	*(1) Trimble GEO 7X Handheld*	*(1) Trimble DiNi Electronic Digital Level* *(3) Topcon/ Sokkia Auto Levels*	*2*

TECHNICAL/MANAGEMENT PROPOSAL
ITEM #3: EQUIPMENT

OFFICE LOCATION(S) (City, State)	EQUIPMENT (Indicate Quantity)											
	KONICA MINOLTA BIZHUB COPIERS	DESKTOP COMPUTER	LAPTOP	OCE MODEL TDS 400 SCANNER/PLOTTER	4WD VEHICLE W/CELL, TIRE CHAINS, STANDARD SURVEYING HAND TOOLS	MAGNETIC LOCATORS	TWO WAY RADIOS	CHAIN SAWS	DIGITAL CAMERAS	SCIENTIFIC CALCULATORS	OPUS PROJECTS CERTIFIED USERS	4 WHEELER AND TOW TRAILER
Sandpoint, Idaho	*1*	*5*	*5*	*1*	*3*	*2*	*6*	*2*	*6*	*4*	*3*	*2*
Coeur d'Alene, Idaho	*2*	*12*	*2*	*1*	*2*	*2*	*4*	*2*	*10*	*4*	*1*	*1*

4. Location/Geographical Areas

i. Ruen-Yeager & Associates, Inc. (RYA) has the BPA trained staff, Licensed Professional Surveyors, and equipment to provide services on BPA work assignments anywhere in Idaho, Washington, and Montana. RYA has consistently provided these services to BPA and has staff familiar with the BPA facilities in this region, as well as intimate knowledge of the areas. RYA has Professional Land Surveyors Steven R. Sprague, PLS and Steven J. Binnall, PLS with a combined 25 years of BPA experience, Party Chiefs Don D. Crawford and James T. Cheslic with a combined 42 years of BPA experience, Land Survey Office Technicians Bruce L. Clark and Conrad J. Vogel with a combined 36 years of BPA experience, along with Survey Technicians with broad BPA experience to provide efficient, technically sound, quality performance on BPA work assignments.

In addition, as stated in the Subcontracting Plan, Ruen-Yeager & Associates, Inc. can provide services to the Oregon and Western Washington area through the utilization of OBEC Consulting Engineers (OBEC) as a subcontractor. RYA can also provide cost efficient services to Northern California through coordination of RYA's California licensed Professional Land Surveyor Darrel G. Ramus, PLS and utilization of OBEC's survey crews.

ii. RYA has offices in both Coeur d'Alene and Sandpoint, Idaho. Both offices are central to Idaho, Western Montana and Eastern Washington to provide services to these areas with minimal reimbursable travel expenses. RYA is amenable to providing a regional office for project specific work assignments if required.

For a listing of RYA staff, their labor classifications and office locations, please reference the following "Locations" Worksheet.

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #4: LOCATION/GEOGRAPHICAL AREAS

NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASS. PER SOW	ALT. LABOR PER SOW CLASS	COMPETENT USER OF THE FOLLOWING: (1.µV8i, 2.µV8i In-Roads, 3.TBC, 4.Trimble Access, 5. OPUS Projects)
Richard E. Waltrip, PLS	*Coeur d'Alene, Idaho*	*Survey Manager*	*Project Surveyor, GIS Analyst*	
Gilbert C. Bailey, PLS	*Sandpoint, Idaho*	*Project Surveyor*	*Survey Manager, Land Survey Office Technician*	*1, 3, 4, 5*
Steven R. Sprague, PLS	*Coeur d'Alene, Idaho*	*Project Surveyor*	*Land Survey Office Technician, Survey Party Chief*	*3, 4, 5*
Steven J. Binnall, PLS	*Sandpoint, Idaho*	*Project Surveyor*	*Land Survey Office Technician, Survey Party Chief*	*1, 2, 3, 4, 5*
Darrel G. Ramus, PLS	*Coeur d'Alene, Idaho*	*Project Surveyor*	*GIS Analyst*	*1, 3, 4, 5*
John H. Kinney, PLS	*Coeur d'Alene, Idaho*	*Project Surveyor*		
Bruce L. Clark	*Sandpoint, Idaho*	*Land Survey Office Technician*	*Cartographic Technician, GIS Technician, Drafter/Cad Operator II*	*1, 2, 3*
Corey J. Vogel	*Sandpoint, Idaho*	*Land Survey Office Technician*	*Cartographic Technician, GIS Technician, Drafter/Cad Operator II*	*1, 2, 3*
Stefani D. Mason	*Coeur d'Alene, Idaho*	*GIS Technician*	*Land Survey Office Technician, Cartographic Technician, Drafter/Cad Operator II*	*1, 2*
Joseph E. Mitchell	*Coeur d'Alene, Idaho*	*Drafter/Cad Operator II*	*Survey Aide*	
Lisa M. Adair	*Sandpoint, Idaho*	*Drafter/Cad Operator II*	*GIS Technician, Survey Aide*	
Don D. Crawford	*Sandpoint, Idaho*	*Survey Party Chief*	*Land Survey Office Technician, Drafter/Cad Operator II*	*3, 4, 5*
James T. Cheslic	*Sandpoint, Idaho*	*Survey Party Chief*	*Survey Technician*	*4*
F. David Higgins	*Sandpoint, Idaho*	*Survey Technician*	*Survey Party Chief, Survey Aide*	*4*
Brent G.Gruenhagen	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Party Chief, Survey Aide*	*4*
Scott Kirking	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Aide*	*4*
Peter Wilson	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Aide*	*4*
Frank C. Heilman	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Aide*	
Kimberley I. Williams	*Coeur d'Alene, Idaho*	*Survey Aide*		
Gregg Anderson	*Sandpoint, Idaho*	*Survey Aide*		
Matt J. Harwood	*Coeur d'Alene, Idaho*	*Survey Aide*		
Jessica S. Brinkmeier	*Coeur d'Alene, Idaho*	*Clerical/Administration*		
Kirsten M. Nickerson	*Coeur d'Alene, Idaho*	*Clerical/Administration*		

RYA – Safety Plan

Safe Practices

The most important safe practice is this: *Avoid bringing yourself, or any object you are holding, too close to an overhead power line.*

As a general precaution, when under a line, never put yourself or any object any higher than 14 feet above the ground.

The most significant risk of injury from a power line is the danger of electrical contact.

Be Consistently Alert for Hazards.

Being consistently alert for unsafe situations is the basic concept for all safety plans. This is particularly true in the proximity of high voltage facilities. Electricity normally cannot be perceived by the senses and contact with live high voltage electrical parts can be fatal.

Plan to manage work near electric overhead power lines so that risks from accidental contact or close proximity to the lines are adequately controlled.

Safety precautions will depend on the nature of the work and will be essential even when work near the line is of short duration.

Safety can be achieved by a combination of measures:

- Planning and preparation
- Eliminating the danger
- Controlling the access
- Controlling the work

Individual Responsibility

All workers share the responsibility for safety. It is everyone's responsibility to follow the safety rules applicable to the job being performed. Workers shall report all unsafe tools, unsafe equipment, hazardous conditions and/or unsafe procedures that come to their attention. Any worker that observes an unsafe condition or procedure shall immediately notify the other workers involved or worker in charge. Willingness and ability to work safely is an ongoing measure of each person's performance.

Party Chief Responsibility

Party Chiefs shall ensure that all workers fully understand how to perform their work with safety for themselves and others, and violations of established safety practices and rules will not be tolerated.

Party Chiefs shall plan and arrange their work to ensure that each job will be accomplished with the least hazard to workers, other persons, including the public, and to property. They will advise all workers of any unusual hazards involved in the work and of precautions to be observed.

Survey Crew Responsibility

Power Line Safety Recap

- Plan the work before going to the field.
- Recon the jobsite before beginning work.
- Identify and discuss all hazards.
- Discuss special circumstances with your supervisor.
- Document the safety meeting.
- Consider ALL power lines as energized.
- Maintain awareness of power lines.
- Maintain required clearance from power lines – more clearance if the line is higher voltage.
- Use extreme caution when using tall rods, especially 25 foot rods.
- Do not extend rods through a tree canopy unless you are certain it is clear above.
- Conduct and document Power Line Safety & Electrical Emergencies training annually.
- Remember – **Safety is everyone's responsibility.**

Traffic Control

In addition to following available guidance, efforts should be made to conduct the survey in a way that minimizes hazards to the survey crew and the public. Effort should be made to keep the Survey Baselines on one side of the roadway so as to isolate encroachments on the roadway. When working in the roadway is necessary, additional traffic control may be necessary.

Prior to starting a survey the Survey Party Chief should meet with the Survey Supervisor to discuss what traffic control measures are necessary for conducting the survey. Work zones shall be established according to the MUTCD.

At a minimum each RYA Survey crew members shall have access to necessary Traffic Control devices including:

- Survey Crew Ahead Signs
- Work Zone Ahead Signs

- No Shoulder Ahead Signs
- Flag Person Ahead Signs
- Flags
- Paddles
- Traffic Cones

*Refer to the MUTCD for standards and typical applications of these traffic control devices.

Safety Equipment

At a minimum each RYA Surveys crew member should be equipped with Personal Safety Equipment including vest, hard hat, and proper work shoes and clothing as described in applicable the Safety and Health Program Handbook, Footwear Requirements, Chainsaw Use Manual, and Accident Prevention Manual.
Each crew will have a fully supplied first aid kit.

Each RYA crew vehicle is equipped with an axe, bucket, fire extinguisher, and shovel.

Wearing of Hard Hats

Approved hard hats shall be worn by ALL RYA personnel in the following locations and conditions except for work inside transformers, power circuit breakers, under vehicles or in similar restricted/protected situations:

- In fenced substation yards and other designed hard hat areas.
- When engaged in or when in the close proximity of outdoor work or in all areas where there is exposure above head level to moving equipment, work or material handling.

Apparel

Clothing appropriate for the job shall be worn! Full-length pants and shirts with full or half sleeves are required when engaged in field, shop or industrial activities. Shorts, tank tops or similar attire is not considered appropriate apparel. Managers and supervisors have the responsibility for assuring that appropriate clothing and apparel is worn. Employees have the responsibility of wearing items that prevent exposure to known or expected hazards.

Loose dangling clothing or accessories shall not be worn where there is possibility of contact with moving machinery.

When work is performed within reaching distance of exposed energized parts, the wearing of conductive objects such as key or watch chains, rings, wrist watches, bracelets, or other conductive objects is prohibited. The wearing of clothing made from acetate, nylon, polyester, or rayon, either alone or in a blend is prohibited when an employee may be exposed to the hazards of electric arcs or flames.

Personal protective equipment is defined under appropriate APM Rules: Head Protection (H-1), Hearing Protection (H-2), Eye and Face Protection (H-3). Special-purpose equipment, used in chain saw operations, specified work on or around high voltage equipment, high pressure air systems, and for handling of hazardous material is defined in applicable BPA Work Standards, Operating Bulletins and BPA Safety and Health Programs.

Safety Restraints, Vehicle

Vehicle safety restraints, as provided, shall be worn at all times while the vehicle is in motion.

Occupants are individually responsible for fastening and securing their safety restraints before the vehicle is in motion.

Energized Facilities

The primary electrical hazards are from BPA and other power lines and from substation equipment.

- Stay away from down power lines.
- Maintain Minimum Approach Distance (10 to 19 feet depending on type). In particular, watch the overhead clearance to survey rods and other survey equipment which can conduct electricity.
- Two or three RYA field surveyors will be authorized for unescorted access to substations. They have been trained and are tested every two years. If they are escorting you, obey their instructions and ask for guidance if you have questions about safe practices.
- Tailgate meetings will be conducted each morning before entering a BPA Energized Facility.
- Orange vests are for Safety Watchers in energized yard (per Accident Prevention Manual page R55) RYA personnel will not wear orange vests when working in the energized yard.

Brush Cutting

Our primary tools to cut brush are machetes and chain saws. Both can be dangerous.

- Wear safety glasses and gloves when using machetes.
- Place machetes in scabbards when not in use.
- When using chainsaws, wear all required personal protection equipment including chaps, hardhats, gloves, hearing protection, face protection, and safety glasses.
- Clear trip hazards when cutting brush and do not leave sharp points. Cut stems square.
- Keep machetes, chain saws, and other brushing equipment sharp and in good repair.
- Gloves will be worn when conditions warrant.

- Be aware that branches and stems may move or spring back without warning, possibly striking the worker or deflecting a machete or chainsaw.

Documentation of Safety Procedures and Incidents

The following procedures will be followed to report injuries or near miss incidents on all BPA work assignments:

1. Ruen-Yeager & Associates, Inc. shall maintain an accurate record of, and shall immediately report to the BPA COTR, all cases of death, occupational diseases, and injury arising from, or incident to, work performed under this contract. The record and report shall include a description of the preventative measures to be taken to avoid recurrence, any restitution or settlement made, or status thereof.
2. Ruen-Yeager & Associates, Inc. shall complete and submit to the BPA COTR BPA Form 6410.15E (Contractor's Report of Personal Injury, Illness, or Property Damage Accident – see attached form) within five (5) working days of such occurrence.
3. In the case of near miss incident that does not involve, injury, illness, or property damage, Ruen-Yeager & Associates, Inc. shall complete and submit to the BPA COTR BPA Form 6410.18e within five (5) working days of such occurrence.

Unauthorized Entry (Breach of Security)

Upon discovery of an indication of forced entry or other breaches of security, e.g., suspicious object found:

- If you believe that the intruder(s) may still be on site, call 911 and notify the Local Law Enforcement Agency and request an officer to accompany you during any further investigation. Withdraw to a safe location to await the arrival of the police.
- Notify the Dispatching office having jurisdiction. Ask Dispatch to notify BPA Security and Emergency Management.
- Notify the Chief Operator and the Regional Manager.
- Once the police arrive, you may proceed with further investigation. Make sure a thorough inspection of the premises noting any vandalism, missing items, or other abnormalities, and report these to the appropriate Regional personnel.
- If a suspicious foreign object is found that could conceivably be an explosive device:
  - Do not touch or move the object.
  - Immediately evacuate the site of all personnel (within ½ mile if possible).

- Discontinue use of all fixed and mobile radio transmitters, i.e. VHF radios and cellular phones (power line carrier, microwave, and local telephones are okay to use).
- Do not perform any high voltage switching to energize or de-energize high-voltage equipment.
- Notify the appropriate Dispatching office.
- Notify the District Chief Substation Operator and the Regional Manager.
- Notify local law enforcement officials and inform them of the nature and location of the object.
- Meet local law enforcement officials and inform them of the nature and location of the object.

6. Quality Assurance (QA) and Control (QC)

Ruen-Yeager & Associates, Inc. provides the following specific example of quality assurance - quality control (QA/QC) that will be utilized to ensure both surveying and mapping tasks and deliverables are performed and prepared safely, accurately, efficiently, correctly, on schedule, within a market competitive estimate level of effort and consistent with Statement of Work requirements.

RYA has always maintained a strict standard of quality control and is proud of the reputation we have in North Idaho for quality professional services. RYA has recently implemented significant corporate changes to maintain that reputation for quality we have built from years of diligent hard work.

The following are specific tasks and measures of quality assurance and quality control that will be rigorously applied to ensure a quality product – done right, and on time.

RYA will diligently engage in a pre-work meeting with Survey Managers, Project Surveyors, Land Survey Office Technicians, and Party Chiefs to make sure everyone involved has a complete understanding of the task to be completed and to insure that personnel are qualified and knowledgeable of task to be performed.

1) Static, RTK, RTN and Differential GPS use:

- Use industry standard procedures for static and RTK observations.
- Verify static observations with independent session processing.
- Verify RTK, RTN/VRS by tying to established or published control and making redundant observations to new points.
- Review and red check all Field Notes.

2) Staking Structures

- Check all staked points from horizontal and vertical control.
- Close all control traverses to known control.
- Recheck staked points from a different control point.
- Review and red check all Field Notes.

3) Earthwork Staking

- Work from control that has been established by proper and accepted methods and check back into control.
- Perform redundant rod and instrument height checks throughout course of project, especially at start and end of each day.
- Check staking horizontal and vertical from at least one separate, independent instrument setup.
- Review and red check all Field Notes.

4) Topographic Survey

Conventional Survey

- After initial instrument setup and back sight check, a back sight check will be performed after approximately 40 to 50 topo shots.
- If back sight check shot is within an acceptable tolerance of record values, then the instrument angle will be reset to 0°00'00" and topographic data collection can continue.
- If back sight check shot is in error, all previous topo shots from last good back sight check will be re-shot.
- Once data collection has been completed from a particular setup, the total station will be moved to the next location and a back sight will be performed.
- Take a check shot to the last stored topo point from the last instrument setup to verify accuracy.

RTK GPS Survey

- After initial setup of base receiver, perform an Observed Control Quality check shot measurement on a nearby control point.
- After approximately 40 to 50 topo shots the Rover receivers initialization will be "dumped".
- After moving Rover approximately 50-100 feet away, initialization will be regained "On The Fly" (OTF), and last topo shot will be re-measured and checked for accuracy.

5) Boundary Surveying

- Compare measured monumentation to record information.
- Complete coordinate comparison sheet for any traverses included in record or sectional ties.
- Start and close conventional traverses to existing control.
- Using Dual RTK GPS Bases, measure monument from first base and store position. Switch radio frequency to second base and measure same position a second time. This will provide RTK vectors to monument from each GPS base unit that can be compared for accuracy.
- Review and red check all Field Notes.

6) Preparing Legal Descriptions with Exhibits from Provided Deeds and Title Reports.

- RYA's Survey Manager will monitor progress of the preparation of documents to ensure on time submittals and quality of the documents.
- Land Survey Office Technician will review each title to ensure accuracy and readability. RYA understands this first step is important for the QA/QC process to identify errors in the title before the preparation of legal descriptions and exhibits.

- Notify BPA's Project Acquisition Land Surveyor and/or COTR immediately if any discrepancies or issues arise that could potentially impact the deliverable.
- Use the BPA checklist when completing any exhibits and legal descriptions.
- RYA understands all documents need to follow BPA Acquisition Manual. The preparer should contact BPA immediately if they encounter issues.
- Completed exhibits and legals are to be reviewed by someone other than the preparer using BPA check lists to verify the documents have been completed according to BPA standards.
- Verify that T.O.D. matches exhibits and plan maps.
- When documents pass this review they are sent to final QA/QC.
- A RYA Project Surveyor designated as the Final QA/QC Reviewer will inspect these Documents using the Submittal Checklist.
- Final reviewed documents are submitted to BPA following the submittal instructions within the BPA Acquisition Manual.

7) Creation of New and Updated Plan and Profile

- RYA will utilize staff with an understanding of BPA mapping standards.
- A Project Team Meeting will ensure all staff understand the mapping task in the Work Assignment.
- RYA Mappers will provide a sampling of completed maps to the QA/QC Land Survey Office Technician to ensure BPA mapping standards and project tasks are being met before proceeding.
- Send a sampling of completed maps (5-10) to the BPA Project Mapper for review to verify mapping processes are clearly understood.
- Completed maps will be sent to RYA's mapping QA/QC for review and to ensure compliance to the BPA Mapping Manual and tasks are being completed per the BPA Checklist for Plan and Profile, and Work Assignments.
- Create a Mapping Narrative.
- Map submittals will follow the procedures provided in the BPA Mapping Manual.

8) Establishing and Verifying Horizontal and Vertical Control

- Static GPS observations will be post processed in OPUS Projects Manager, dependent baselines removed, and appropriate CORS data will be added to increase confidence of network accuracy.
- Obtain additional ties to existing published horizontal/vertical control in the project area to provide an independent check of project control.
- Digital level loops from/through published vertical control may be necessary to meet project specifications and/or provide additional checks of network accuracy.

- Compare and confirm all data measured to record values.
- Complete a control coordinate comparison sheet.
- Review and red check all Field Notes.

9) Preparing Progress Reports

Ruen Yeager & Associates, Inc. Project Surveyors will be responsible for preparing progress reports for each Work Assignment that they are assigned to. The Project Surveyor will monitor the progress of deliverables preparation with staff including Land Survey Office Technician for acquisition/mapping and Party Chief for field work.

The Project Surveyor will have access to Ruen-Yeager & Associates, Inc. in-house job costing software at his work station. He will use this software to monitor the budget and work in progress. He will also monitor the status of project deliverables relative to the budget spent which will be reviewed and reported on the Progress Reports.

The status of project deliverables relative to the budget spent will be reviewed and reported on the Progress Reports.

The Project Surveyor will also confirm that the Progress Report has the correct Project Name, reporting period, Contract/Release, Work Order and Task number, BPA staff listed, and the correct delivery dates and completion percentages. He will also complete the entire Progress Report with emphasis on Percentage Complete, Expenditures, Field and Office Staffing and Assignments being reported since the last report and anticipated for the next reporting cycle. He will also review and confirm all listed issues that may affect project scope, schedule, and budget.

The Project Surveyor will submit the Progress Report to the Survey Manager for final review. The Survey Manager will confirm the reported progress on deliverables, budget spent, and schedule of work progress.

Ruen-Yeager & Associates, Inc. would like to implement a weekly phone meeting with the BPA COTR and our Survey Manager to discuss all active projects. The purpose of the phone meeting would be to provide a quick verbal update on all active projects with specific discussion of any issues that may affect project scope, schedule, or budget needing immediate attention.

Ruen-Yeager & Associates, Inc. has been involved in several projects in the last several years in which we provided BPA with an excellent work product, on time and on budget.

BPA, Patrick J. Hastings, PLS pjhastings@bpa.gov (360) 619-6506

MicroStation LiDAR Training – Bruce L. Clark provided specialized training to BPA staff in 2012 for a process he developed converting LiDAR xyz files to .pod files, and importing/referencing in MicroStation.

FY15 Hybrid Mapping (BPA) $28k - RYA staff converted historical BPA gray scale tiffs maps, imported the maps into Bentley Descartes, cleaned up the maps, repackaged and resent back to BPA.

Palisades-Swan Valley (BPA) $415k – Survey, Mapping, and Acquisition Services – RYA staff performed surveying services and office support for LiDAR Verification, acquisition preparation and QA/QC of acquisition documents and plan and profile mapping.

ESRI Shape Creation (BPA) - During an acquisition, RYA will create a shape file within Bentley map of the acquisition, when the documents are to be processed for submittal, the shape files are imported and is processed through a QA/QA using ESRI ArcMap.

BPA, Mark Boon mtbon@bpa.gov (360) 836-9072

Kalispell-Kerr No. 1 (BPA) $498k – Survey, Mapping, and Acquisition Services – RYA staff performed surveying services and office support for LiDAR Verification, Survey Base Map creation, acquisition preparation and QA/QC of acquisition documents and hybrid plan maps.

Hot Springs-Rattlesnake No. 1 (BPA) $310k – Survey, Mapping, and Acquisition Services – RYA staff performed surveying services and office support for LiDAR Verification, Survey Base Map creation, acquisition preparation and QA/QC for acquisition documents and hybrid plan maps.

Rattlesnake-Garrison No. 1 (BPA) $129k – Re-build Services – RYA staff performed surveying services and office support for LiDAR Verification, Survey Base Map creation.

Garrison-Anaconda No. 1 (BPA) $429k – Survey, Mapping, and Acquisition Services – RYA staff performed surveying services and office support for LiDAR Verification, Survey Base Map creation, acquisition preparation and QA/QC of acquisition documents and hybrid plan maps.

Bell-Boundary Fiber Optic (BPA) $490k - Survey, Mapping, and Acquisition Services – RYA staff performed surveying services and office support for LiDAR Verification, Survey Base Map creation, acquisition preparation and QA/QC of acquisition documents and hybrid plan and profile maps.

HDR, Mike Cooney, PLS Michael.cooney@hdrinc.com (503) 423-3764

I-5 Corridor Reinforcement (BPA) $425k – RYA performed as a subcontractor to HDR providing title certifications for title commitments in support of future right-of-way acquisition activities for the I-5 Corridor Project.

8. Subcontracting Plan

Ruen-Yeager & Associates, Inc. (RYA) understands the desire of BPA to have a Master Contractor who can effectively and efficiently provide services to a majority of the BPA region, including Washington, Oregon, Idaho, Montana, Northern California, Northern Utah, Northern Nevada and Western Wyoming. In order to provide coverage for the majority of these areas, RYA has assimilated the services of OBEC as a subcontractor. With the addition of OBEC and the strategic locations of our combined offices, RYA has the ability to provide BPA with effective and efficient services to all of Idaho, Washington, Oregon, California, and Montana.

RYA has the experienced staff in all disciplines to perform the requirements listed in the Statement of Work for work assignments in Idaho, Montana, and Washington. The intent of RYA to utilize the subcontractor services of OBEC is to procure their services for work assignments that include Oregon. By this teaming agreement, RYA can utilize OBEC professional survey licenses in Oregon, yet choose to coordinate crews out of RYA's offices or OBEC's offices, depending on the location of the project site. RYA would also consider procuring OBEC's Survey Crew services, to support RYA's Professional Licensed Surveyors for work assignments in Western Washington, and North California, in order to provide a local survey crew team and cost efficiency to the project.

RYA has not had any prior experience working with OBEC. However, RYA chose OBEC as their subcontractor based on the knowledge that OBEC has an outstanding reputation as an Oregon firm with fifty (50) years of service to public agencies. OBEC has been providing services to BPA for six (6) years, is currently FISMA "Low Rating" Compliant, and is familiar with BPA standards and procedures.

RYA has offices in Coeur d'Alene and Sandpoint, Idaho and OBEC has offices in Vancouver, Washington, and Lake Oswego, Salem, Eugene, and Medford, Oregon. With RYA's strategic locations in the eastern region and OBEC's strategic locations along the west coast, RYA can effectively and efficiently support surveying and mapping related tasks in the majority of the BPA Service Area.

RYA and OBEC collectively have eight (8) Idaho, five (5) Washington, four (4) Oregon, two (2) Montana, and one (1) California Professional Land Survey licenses.

RYA proposes to include the following key personnel from OBEC, and has attached their resumes on the following pages. Additional OBEC staff may be utilized based on the staffing requirements of the project.

Jim Colton, PLS	**Oregon PLS 58756, Idaho PLS 15464**	**OBEC Office - Eugene, OR**
Andrew Silbernagel, PLS	**Oregon PLS 79198, Certified Federal Surveyor 1655**	**OBEC Office – Eugene, OR**
Andrew Plett, PLS	**Oregon PLS 78538, Washington PLS 50707**	**OBEC Office – Vancouver, WA**
Logan T. Miles, PLS	**Oregon PLS 65452, Idaho PLS 15629**	**OBEC Office – Medford, OR**

8. Subcontracting Plan

RYA has included in our Business/Pricing Proposal, an OBEC Schedule of Prices and Key Personnel Breakdown of Costs Worksheets.

Because RYA intends to independently provide all disciplines in the Idaho, Montana and Washington area, and has teamed with OBEC to provide services in Oregon, it is challenging to estimate a dollar amount or percentage of work that may be awarded to a subcontractor, without the clear project parameters of an actual work assignment. However, RYA can propose a hypothetical work assignment to fulfill this request:

> If BPA were to issue a transmission line survey work assignment with a $500,000 fee that spanned ten miles (five miles in eastern Oregon and five miles into western Idaho), it could be surmised that RYA and OBEC would split the field work of the project, with 50% of the effort by RYA and 50% of the effort by OBEC. RYA would propose an OBEC Oregon licensed Professional Land Surveyor be in direct charge of Oregon data and certification of final Oregon product, and RYA Idaho licensed Professional Land Surveyor be in direct charge of Idaho data and certification of final Idaho product, but all CAD work be done out of the RYA offices in order to ensure consistency of product, and control of quality. RYA would provide the Survey Manager and QA/QC services, as well as all management and communication with BPA. An estimate of fee breakdown would be 30% ($150,000) of the effort performed by OBEC and 70% ($350,000) of the effort performed by RYA.



Jim Colton, PLS | Team Project Manager | OBEC - Eugene, OR

EDUCATION

- Diploma – Surveying and Mapping, International Correspondence School, Scranton – 1983
- General Studies, Northern Arizona University – 1971-72

PROFESSIONAL REGISTRATIONS

- Oregon (PLS 58756)
- Idaho (PLS 15464)

CERTIFICATION/TRAINING

- Trimble Certified GPS Training, 2003, 2005, 2007, & 2008
- RW Acquisition Specialist Training – ODOT
- OPUS Projects – NGS 2011

PROFESSIONAL AFFILIATIONS

- Professional Land Surveyors of Oregon
- Oregon GPS Users Group
- NSPS
- Society of American Military Engineers

BPA ACCESS

- Badged Access
- ProjectWise

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE

Mr. Colton has been working in the surveying profession for over **37 years.** As OBEC's Survey Division Manager, his primary responsibilities include project coordination, management, scheduling field crews, and QA/QC. Jim is skilled in the use of MicroStation V8 and InRoads for creating alignments and processing field codes, and has many years of experience performing boundary, construction, cadastral, ALTA, and topographic surveys. **Jim has been working on a variety of BPA projects since 2009 as a Survey Manager and Project Surveyor.**

RECENT PROJECTS

Olympic Region LiDAR Control Survey (BPA) $250k – Performed field survey and project survey work on this project. He prepared deliverables and QA/QC.

Ross Substation Topographic Survey (BPA) $36k – Provided project management on topographic survey for this BPA substation expansion project. He prepared deliverables, field note documents, and provided QA/QC.

Albany-Eugene No. 1 Rebuild Project (BPA) $867k – Served as project manager on this BPA rebuild project. He used LiDAR point cloud data, prepared documents and deliverables, and performed QA/QC.

Salem-Albany No. 2 Rebuild Project (BPA) $666k – Served as project manager on this BPA rebuild project. He used LiDAR point cloud data, prepared documents and deliverables, and performed QA/QC.

Celilo-Sylmar No. 1 Re-conductor Project (BPA) $336k – Project manager on this BPA rebuild project. He prepared field note documents, deliverables, and provided QA/QC.

CATEGORY OF EXPERIENCE

A. Route Surveying: 36 Years
Field survey and project management experience with Route Surveys for transportation and utility projects.

B. Topographic Surveying: 37 Years
Field survey, project surveyor and project management experience with topographic surveys ranging from surveys for BPA substation expansions and a new substation.

C. GPS Experience: 13 Years
Field survey and project surveyor experience on the BPA Olympia Region and Spokane Area LiDAR Control Surveys, BPA LiDAR verification survey, BPA networks at many substations and

Jim Colton, PLS resume continued…

many GPS control networks for transportation projects.

D. Transmission Line Experience: 25 Years
Field survey and project management experience includes many BPA projects including transmission rebuild projects, LiDAR verification surveys, BPA span studies, measuring sag and attachment points on various sizes of transmission lines lay out and relocation of power lines and a utility conflict for BPA tower removal and installation.

E. Resource Grade GPS Experience: 12 Years Field survey and project management where I collected access road data for several BPA acquisition projects, such as Albany-Eugene No. 1, Salem-Albany No. 1 & 2, utility and wetlands data with Resource Grade GPS equipment. Also used for PLSS and private survey monument searches.

F. Cadastral Experience: 34 Years
Field survey, project surveyor and project management experience includes BPA's Hatwai Substation survey where we had to tie PLSS corners in order to break down a section, several BPA rebuild projects.

G. Legal Description & Exhibit Preparation: 31 Years
Project surveyor and project management experience reviewing deeds, title reports, survey monuments to create base maps for acquisitions, preparation of legal descriptions and exhibit maps for acquisition of various types of easements and fee parcels, property line adjustments and roadway legalization projects.

H. Survey Maps with MicroStation: 14 Years
Project surveyor and project management experience includes QA/QC of BPA maps of topographic surveys for substation expansion and a new substation (Sappho SS topographic survey), BPA Plan and Profile maps, BPA Records of Survey, BPA Survey Base Maps for transmission line rebuild projects.

I. Surveying Across Tribal/Sensitive Areas: 8 Years
Field survey, project surveyor and project management experience surveying across USFS, USACE and BLM lands for roads and maintenance of USACE boundaries around lakes.

K. LiDAR Point Cloud Data: 6 Years
Experienced using LiDAR point cloud data on a few BPA rebuild projects.



Logan T. Miles, PLS | Registered Land Surveyor | OBEC - Medford, OR

EDUCATION
- BS – Surveying, Oregon Institute of Technology – 2001

PROFESSIONAL REGISTRATIONS
- Professional Land Surveyor, Oregon No. 65452 (2005)
- Professional Land Surveyor, Idaho No. 15629 (2013)

CERTIFICATION/TRAINING
- Trimble Certified GPS Training, 2003, 2005, 2007, 2013
- Right-of-Way engineering, 2007 – ODOT
- Micro Station Training
- Procedures for Energized Access, Permits, and Clearance Certifications (Non-Electrical Access Permit)
- NERC-CIP Energized Access Training
- OPUS-Projects Managers Training

PROFESSIONAL AFFILIATIONS
- Professional Land Surveyors of Oregon
- National Society of Professions Surveyors (NSPS)
- Past President of PLSO Rogue River Chapter
- Past President and Co-founder of the Student Chapter of PLSO
- Oregon State Board of Examiners for Engineering and Land Surveying – Examination Development Team
- Oregon State Board of Examiners for Engineering and Land Surveying – Board Member Land Surveyor

BPA ACCESS
- Logical Access (myPC, eGIS, LIS)
- Badged Access
- Transmission Line Corridor Access with TM Key
- ProjectWise
- Non-Electrical Energized Access

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE
Mr. Miles has **15 years** of experience in the surveying profession. He has experience performing data analysis, GPS setup and processing, planning applications, survey maps, subdivisions, and partition plats. Additional survey experience consists of topographic and construction survey, GPS data collection for GIS of installed fiber optic cables, topographic and cadastral surveys, topographic mapping, and corner restoration. He is involved with projects from the initial scoping phase and will ensure that survey deliverables are prepared to BPA standards. **Mr. Miles has worked on many BPA projects as a project surveyor.**

RECENT PROJECTS
Reedsport Substation Record of Survey (BPA) $35k – Provided project surveying, route survey field work, RW/easement acquisition, QA/QC, field note documents, and deliverables preparation.
Sawtell Peak & Macks Inn Radio Site Surveys (BPA) $28k – Provided project surveying, control network, field note documents, and deliverables preparation.
FY12, FY13, & FY14 RADIO Inventory Project (BPA) $150k – Provided project surveying, control network, route survey field work, field note documents, and deliverables preparation.
Thunder Ridge Radio Site Acquisition and ROS (BPA) $16k – Provided project surveying, control network, route survey field work, RW/easement acquisition, field note documents, and deliverables preparation.

Logan T. Miles, PLS resume continued…

Bonanza Butte & Ferry Butte Site Acquisition Surveys (BPA) $23k – Provided project surveying, control network, route survey field work, RW/easement acquisition, QA/QC, and deliverables preparation.

CATEGORY OF EXPERIENCE

A. Route Surveying: 10 Years
Performed retracement surveys primarily for bridge replacements and realignments, transmission lines, substations and radio sites. Survey work includes topographic data collection and construction layout of streets, roads, bridges and various utilities, including the design and preparation of legal descriptions for acquired right-of-way and easements for many clients including BPA

B. Topographic Surveying: 15 Years
Related similar topographic surveying for radio sites, substations, large sewer treatment plants, industrial yards, flumes, forebays, roadways, bridges, city streets for utilities, clean water intake structures.

C. GPS Experience: 15 Years
Large regional and midsized to small photo control projects, horizontal and vertical control networks utilizing GPS and digital levels. OPUS-projects manager adjustments, OPUS database use and TBC adjustments are all part of my experiences. RTK/RTN surveying for all types of projects including construction, boundary, retracement, as-built and topographic surveying.

D. Transmission Line Experience: 5 Years
Boundary and topographic location of proposed transmission lines for the purpose of writing legal descriptions for easements for the new or re-located transmission lines access roads and radio sites. I have worked on LiDAR Verification, Span Studies, Rebuild Projects, and Foreign Crossing Studies

E. Resource Grade GPS Experience: 15 Years
Performed resource grade data collection and processing for many projects, including the Level (3) fiber optic cable from Yakima, Washington, to Ontario Oregon, along portions of numerous sections across the western United States. Other resource grade applications include wetland delineations, bore holes and utility as-built surveys, access road surveys, radio inventory surveys with Trimble equipment and with Pathfinder Office.

F. Cadastral Experience: 8 Years
Interned with the Winema National Forest, as well as performing multiple cadastral surveys as part of many types of projects over the years, including, substation surveys, radio site surveys, highway/road retracement surveys and private boundary surveys, land development projects and subdivision of section surveys.

G. Legal Descriptions & Exhibit Preparation: 11 Years
I have worked on many types of legal descriptions and exhibit maps, including BPA A-tracts, additional width tracts, access road acquisitions, Radio Site acquisitions, Land Disposal Requests, Superseded tracts, utility and slope easements, highway/roadway strip descriptions for right-of-way and easement acquisitions, private access easements, property line adjustment descriptions, vesting deed descriptions and land development related descriptions.

H. Survey Maps with MicroStation: 7 Years
Working with Agencies like BPA and ODOT has provided many opportunities to produce MicroStation deliverables for a variety of survey applications. Some of these include substation topo and retracement maps, plan

Logan T. Miles, PLS resume continued…

maps, hybridized maps, Survey Base Maps for transmission lines, radio sites and access road acquisitions, exhibit maps for acquisitions, intelligent digital terrain models (DTM), shape files, roadway retracement and monumentation surveys, right-of-way roll maps, records of surveys, construction calculation maps and as-built maps.

I. Surveying Across Tribal/Sensitive Areas: 9 Years

Worked on projects that included many different types of public and private land ownerships including Tribal Lands and lease acquisitions, Federal Aviation Administration sites, Forest Service/BLM lands, Railroad rights-of-ways, water intake plants, treatment plants, energized areas, wetland areas, in-water work areas and archaeological zones within construction sites.

J. GIS Attribute Data Collection: 15 Years

Level (3) fiber optic location and attributes collection, high accuracy attributed data collection of BPA Radio inventory project, attributed data collection for BPA access road surveys and survey grade attributed collection for surveying applications like topographic surveys, retracements and boundary surveys.

K. LiDAR Point Cloud Data: 3 Years

Working with LiDAR data with crossing inventories, data checks, beam path profiles/tree heights, mobile scan data for roadway projects, plan and profile hybridizations and many more to come and the technology advances.



Andrew Plett, PLS | Registered Land Surveyor/Survey Party Chief | OBEC - Vancouver, WA

EDUCATION

- BS – Geomatics, Oregon Institute of Technology - 2006

PROFESSIONAL REGISTRATIONS

- Oregon (PLS 78538)
- Washington (PLS 50707)

CERTIFICATION/TRAINING

- Trimble Certified GPS Training, 2013
- ODOT Traffic Control Technician Training, 2013
- OIT/BLM Conference, 2011, 2012, 2013
- OPUS Projects Managers training, 2014

PROFESSIONAL AFFILIATIONS

- Professional Land Surveyors of Oregon
- National Society of Professional Surveyors

BPA ACCESS

- ProjectWise
- Logical Access (myPC, eGIS, LIS)
- Badged Access
- Transmission Line Corridor Access with TM Key

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE

Mr. Plett has **12 years** of progressive field and office surveying experience, including GPS, location, boundary, topographic, construction surveying, and ROW mapping and descriptions. Andrew has processed field data (conventional and GPS), prepared Field Notes, and prepared and recorded Partition Plats and Records of Survey. He has experience leading survey crews, and he has earned a reputation for his accuracy and timely product delivery. **Mr. Plett has served as a project surveyor on many BPA projects.**

RECENT PROJECTS

Salem-Albany No. 1 (BPA) $30k –Project surveyor on this BPA rebuild project. He provided route survey field work, RW/easement acquisition, and he prepared deliverables and provided QA/QC.
John Day Powerhouse ARAR Documents (BPA) $11k – Project surveyor on this project and he prepared deliverables and provided QA/QC.
Ross Complex Topo (BPA) $36k – Project surveyor on this project, and he performed route survey field work, prepared Field Notes and deliverables, and provided QA/QC.

CATEGORY OF EXPERIENCE

A. Route Surveying: 3 Years
Route surveying projects both in retracing road alignments and transmission line alignments. This included research, coordinating the control survey, resolving alignment and right-of-way issues, and monumentation.

B. Topographic Surveying: 12 Years
Extensive experience in topographic mapping, both in the field and the office. Field techniques have included conventional total station and GPS surveying, GPS-equipped all-terrain vehicles, plane table, and DTM creation from LiDAR and DEM data, with field verification.

C. GPS Experience: 12 Years
GPS surveying includes static, fast static, OPUS, OPUS Projects, RTK, and network RTK techniques.

D. Transmission Line Experience: 3 Years
Experience with transmission line surveying with BPA, and crossing inventories, L-line.

Andrew Plett, PLS resume continued…

retracement, access road surveys, acquisition document preparation and review, encroachment surveys, topographic surveys, and GIS work.

E. Resource Grade GPS Experience: 2 Years
Field experience with resource-grade GPS for access road surveys, including attribute entry, troubleshooting, point and linear features.

F. Cadastral Experience: 11 Years
Cadastral and boundary retracement, including multiple college courses in boundary retracement, land survey work for boundary disputes heading to litigation, conventional boundary surveying, restoration of cadastral corners based on found and opened original bearing trees and other evidence, Section breakdown.

G. Legal Description & Exhibit Preparation: 10 Years
Experience in writing all manner of legal descriptions including metes and bounds, strip, PLSS, route, and easement descriptions and their associated exhibits.

H. Survey Maps with MicroStation: 3 Years
Experience with MicroStation with InRoads, creating topographic maps and DTMs, record of surveys for retracements, exhibits, acquisition maps, and plan maps.

I. Surveying & Mapping Across Tribal/Sensitive Areas: 5 Years
Some experience working on cadastral retracements adjoining and across USFS and BLM lands, including working in conjunction with the USFS in retracement of a Forest Road

J. GIS Attribute Data Collection: 2 Years
Multiple college classes in GIS including ArcMap; experience in shapefile creation from survey data, GIS data entry using deeds, aerial photos, and PLSS data; GIS database creation and editing.

K. Working with LiDAR Point Cloud Data: 2 Years.
Experience with attaching point clouds to survey drawings in MicroStation and Civil3D, configuring point cloud display options, extracting surfaces from point clouds, extracting data from point clouds, using PLS-CADD to view and export data.



Andrew Silbernagel, PLS, PE, CFeds, WRE | Project Surveyor/Team Lead | OBEC - Eugene, OR

EDUCATION
- BS – Civil Engineering, Oregon State University – 2007

PROFESSIONAL REGISTRATIONS
- Professional Land Surveyor, Oregon 79198 (2011)
- Professional Engineer, Oregon 79198 (2012)
- Water Rights Examiner, Oregon 79198 (2012)
- Certified Federal Surveyor 1655 (2015)

CERTIFICATION/TRAINING
- Certified Federal Surveyor Program
- OPUS Projects
- CPR-First Aid
- Fall Protection
- Confined Space
- Traffic Control Technician

PROFESSIONAL AFFILIATIONS
- Professional Land Surveyors of Oregon
- National Society of Professional Surveyors

BPA ACCESS
- ProjectWise

EXPERIENCE SUMMARY/YEARS OF EXPERIENCE
Mr. Silbernagel has **9 years** of surveying experience. He communicates with project surveyors, crew chiefs, and other disciplines to assist with research and documentation of field work. He communicates with clients and teaming partners, and he oversees field work and coordinates with field crews to keep projects on schedule. Mr. Silbernagel prepares legal descriptions, records of surveys, and prepares deliverables for submittal to clients. **Mr. Silbernagel has been working on BPA projects since 2009.**

RECENT PROJECTS
FY15 Baseline Modernization (BPA) $67k –Project surveyor on this baseline modernization and he prepared field note documents, deliverables, and provided QA/QC.
Salem-Albany No. 2 Rebuild Project (BPA) $666k –Project surveyor on this BPA rebuild project, providing RW/easement acquisition, QA/QC, and preparation of Field Notes and deliverables.
Salem Albany No. 1 Plan and Profile Maps (BPA) $30k –Project surveyor on this BPA project, providing deliverables, Field Notes, and QA/QC.
Celilo-Sylmar No. 1 Re-Conductor Project (BPA) $336k –Project surveyor, providing route survey field work, RW/easement acquisition, QA/QC, field note documents, and deliverables.

CATEGORY OF EXPERIENCE
A. Route Surveying: 9 Years
Surveyed numerous state highways, county roads, and city streets for bridge construction and road realignments. Designed and ran control networks, preformed monument recovery, collected topographic data, retraced right-of-ways, prepared legal descriptions and exhibits for right-of-way acquisition, and done construction layout.

B. Topographic Surveying: 9 Years
Nine years of topographic mapping experience. I started as rod man and have moved up to processing field data and then overseeing field crews collect and process data.

Andrew Silbernage, PLS, PE, CFeds, WRE resume continued…

C. GPS Experience: 9 Years
I have used OPUS, OPUS-RS and OPUS Projects to establish control at a site, for anything from LiDAR verifications, Substation Topographic surveys, to bridge replacement sites. Over the last several years I have used the Oregon real-time network (ORGN) and the Trimble VRS-Now Network.

D. Transmission Line Experience: 5 Years
I have gained transmission line experience through working on BPA projects. I have performed LiDAR Verification, Span Studies, Rebuild Projects, and Foreign Crossing Studies.

E. Resource Grade GPS Experience: 9 Years
I have collected and processed numerous access roads for BPA acquisition projects and Wetland Delineation Projects (Salem-Albany No.1 & No.2, Lane-Wendson, Celilo-Slymar)

F. Cadastral Experience: 9 Years
Located numerous government corners to aide in the other types of surveys listed above. In the winter of 2014-2015 In February 2015 I passed the exam and became a CFedS.

G. Legal Description & Exhibit Preparation: 4 Years
Written and reviewed numerous legal descriptions for access roads on BPA rebuild projects (Celilo-Sylmar, Salem-Albany No.2, Lane-Wendson, and Marion-Alvey).

H. Survey maps with MicroStation: 9 Years
I have almost exclusively used MicroStation as my CAD platform. Just over five years ago I started using MicroStation with BPA SPACE.

I. Surveying across Tribal/Sensitive Areas: 9 Years
Performed a topographic survey at the Hawaii Substation on the Nez Perce reservation. The CFedS training I took discussed some of the concerns over tribal sensitive areas. On ODOT and local agency projects I have worked on BLM, USFS, and USACE Lands and have encountered archeological sites, hazmat sites, railroads, and wetland sites.

J. GIS attribute data collection and deliverables including ArcMap use: 9 Years
Attributed data collection has been part of my survey career from the beginning. I have performed numerous topographic surveys in which the data could have been extracted and placed into a GIS database.

K. LiDAR & Cloud Point Data: 5 Years
I have used LiDAR Point Cloud data on a few rebuild projects (Salem-Albany No. 1 and No. 2, and Albany-Eugene.) For these projects we were provided the LiDAR data from BPA and had to go in and extract vertical clearances and foreign crossing information.

OBEC Consulting Engineers

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #3: EQUIPMENT

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)											
	µ V8i license	µ V8i In-Roads license & Power InRoads license	TBC license's w/ current maintenance agreement	Data Collectors with Trimble Access w/ License Agreements (ALL TRIMBLE)	Dual frequency GPS RTK receiver pair (ALL TRIMBLE)	3" total station with long range reflectorless (ALL TRIMBLE)	Dual frequency GPS RTN receiver	Dual frequency GPS Static receiver (ALL TRIMBLE)	Resource Grade GPS Receivers	Trimble Pathfinder Office (Current)	PLS-CADD	ERSI ARCMAP 10.3
Vancouver, WA.	*unlimited +*	*unlimited +*	*5 **	*1 TSC3*	*1*	*1 Trimble S6*	*1 R8 GNSS*	*1 R8 GNSS 1 R7 GNSS 1 R8*	*1 GEO XT*	*2 shared*	*1 shared*	*1 shared*
Lake Oswego, OR.	*unlimited +*	*unlimited +*	*5 **	*2 TSC3's, 2 TSC2'S*	*1*	*2 Trimble S6's*	*1 R8 1 R8 GNSS*	*1 R8 GNSS 1 R7 GNSS 1 R8*	*1 GEO-XT*	*2 shared*	*1 shared*	*1 shared*
Eugene, OR.	*unlimited +*	*unlimited +*	*5 **	*3 TSC3's, 2 TSC2'S*	*1*	*1 Trimble S8, 2 Trimble S6's*	*1 R8 2 R8 GNSS*	*2 R8 GNSS 1 R7 GNSS 1 R8*	*1 GEO XT*	*2 shared*	*1 shared*	*1 shared*
Medford, OR.	*unlimited +*	*unlimited +*	*5 **	*2 TSC3's, 2 TCS2's 14 Total*	*1 4 Total Pairs*	*2 Trimble S6's 7 Total*	*1 R8 1 R8 GNSS 8 Total*	*1 R8 GNSS 1 5700 12 Total*	*1 GEO-XH 4 Total*	*2 shared*	*1 shared*	*1 shared*

+ - Our agreement with Bentley allows for an unlimited number of users

* - We have 5 licenses available on a first come basis that can be shared across all of our offices

** - Each of our trucks are equipped with tire chains and associated hand tools standard for field surveying

OBEC Consulting Engineers

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #3: EQUIPMENT

OFFICE LOCATION(S) (City, State)	ADDITIONAL ITEMS													
	Bentley Descartes V8i	4x4 Truck w/ tire chains and winches	Digital Level	Scientific Calculator	Magnetic Locator(s)	Two-way radios	Chainsaw	Digital Camera	DOT/OSHA - approved safety equipment	Hand tools standard to field surveying	Computers and related software to support field Surveying	Oregon RTN (ORGN) Subscriptions	Washington RTN (WSRN) Subscriptions	Trimble RTN VRS NOW Subscriptions
Vancouver, WA.	*unlimited +*	*1*	*1 Trimble DiNi*	*1*	*1*	*1 set*	*1*	*1*	*For 1 person*	*1***	*1*	*5 shared*	*1 shared w backup*	*2 shared*
Lake Oswego, OR.	*unlimited +*	*1*	*1 Trimble DiNi*	*1*	*2*	*2 sets*	*1*	*1*	*For 2 persons*	*1***	*1*	*5 shared*	*1 shared w backup*	*2 shared*
Eugene, OR.	*unlimited +*	*2*	*2 Trimble DiNi's*	*4*	*3*	*2 sets*	*2*	*2*	*For 4 persons*	*2***	*2*	*5 shared*	*1 shared w backup*	*2 shared*
Medford, OR.	*unlimited +*	*1*	*2 Sokkia SDL30's*	*2*	*2*	*2 sets*	*1*	*1*	*For 2 persons*	*1***	*2*	*5 shared*	*1 shared w backup*	*2 shared*

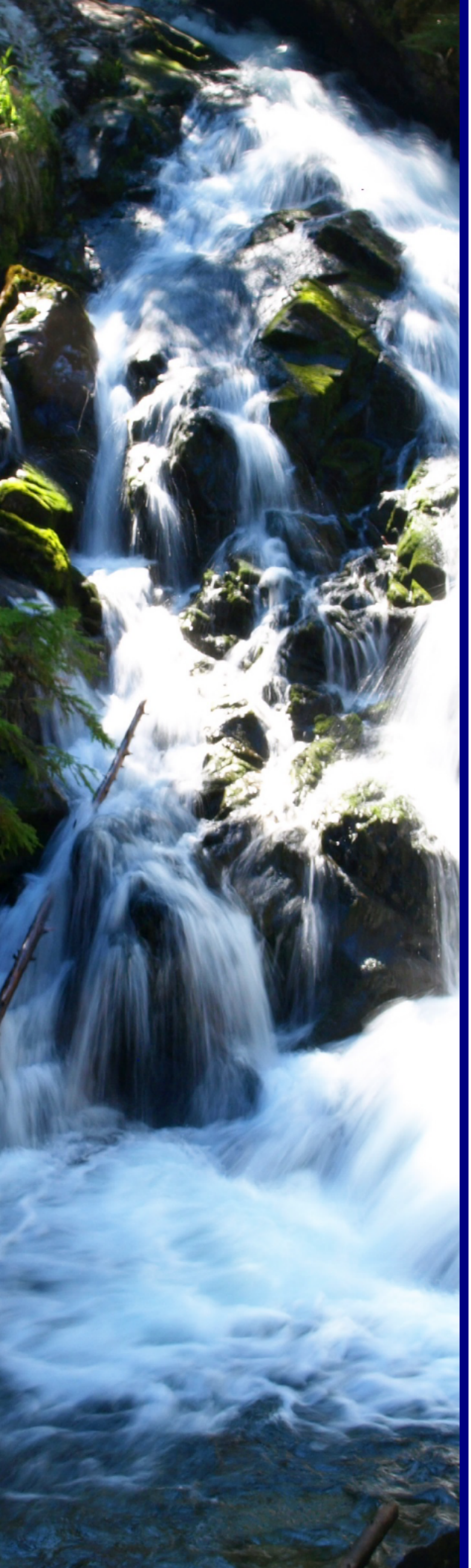
+ - Our agreement with E
* - We have 5 licenses av
** - Each of our trucks ar

OBEC Consulting Engineers

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #4: LOCATION/GEOGRAPHICAL AREAS

NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASS. PER SOW	ALT. LABOR PER SOW CLASS	COMPETENT USER OF THE FOLLOWING: (1.µV8i, 2.µV8i In-Roads, 3.TBC, 4.Trimble Access, 5. OPUS Projects)
Andrew Plett, PLS	*Vancouver, WA.*	*Project Surveyor*	*Party Chief*	*1.,2.,3.,4. and 5.*
Bryan Doss	*Lake Oswego, OR.*	*Survey Party Chief*	*Survey Technician*	*1.,2.,3., and 4.*
Dylan Wike	*Lake Oswego, OR.*	*Survey Technician*	*n/a*	
Jim Colton, PLS	*Eugene, OR.*	*Survey Manager*	*Project Surveyor*	*1.,2.,3.,4. and 5.*
Andrew Silbernagel, PLS	*Eugene, OR.*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Jason Endicott	*Eugene, OR.*	*Survey Party Chief*	*Survey Technician*	*1.,2.,3 and 4.*
Ruben Mendoza	*Eugene, OR.*	*Survey Party Chief*	*Survey Technician*	*1.,2.,3.,4. and 5.*
Yuka Garzenelli	*Eugene, OR.*	*Drafter/ CAD Operator II*	*Cartographic Technician*	*1. and 2.*
Logan Miles, PLS	*Medford, OR.*	*Project Surveyor*	*Party Chief*	*1.,2.,3.,4. and 5.*
Erik Blake	*Medford, OR.*	*Survey Technician*	*Drafter/ CAD Operator II*	*1.,2.,3., and 4.*



Request for Offers No. 3553

For

Bonneville Power Administration Professional Survey and Mapping Services

Business/Pricing Proposal

219 Pine Street
Sandpoint, ID 83864
Phone: (208) 265.4629 E-mail: sandpoint@ruenyeager.com

3201 N. Huetter Road, Suite 102
Coeur d'Alene, ID 83814
Phone: (208) 292.0820 E-mail: ryacda@ruenyeager.com

January 15, 2016

Tracey Albright
Contracting Officer's Representative
Bonneville Power Administration
P.O. Box 491
Vancouver, Washington 98666

Re: RFO No. 3553 Professional Survey & Mapping Services – Request for Offers

Dear Tracey Albright,

In response to the invitation to participate in the Bonneville Power Administration (BPA) Professional Survey & Mapping Services solicitation, Ruen-Yeager & Associates, Inc. (RYA) is pleased to submit this Request for Offers which includes the Business/Pricing Proposal and the Technical/Management (Non-Price/Cost) Proposal. RYA is prepared and motivated to provide the necessary constant, reliable, and competent professional services required by BPA to accomplish design, construction, and acquisition goals.

RYA has completed our due diligence to carefully examine your Request for Offers and associated documents. We recognized and have attached the signed receipt of acknowledgement for RFO 3553 Amendments 001, 002, 003, and 004. We have assembled a team of qualified professionals, led by Darius L. Ruen, P.E. as Principal in Charge and supported by a staff experienced in BPA projects and protocol. Our core BPA team is available for sole commitment to meet the quality, budget, and schedule expectations of BPA projects.

Ruen-Yeager & Associates, Inc., operating as a Small Business Concern, has provided Professional Surveying and Mapping Services to BPA since 1989. We were awarded a BPA contract as a Master Contractor in 1993. Since 2009, we continued to provide services to BPA through a partnership, but have decided to once again submit as an independent Master Contractor. This decision was made to tighten quality control of our work product and improve the communication with BPA through professional management of services. We are confident Ruen-Yeager & Associates, Inc. can provide the Bonneville Power Administration with a quality, responsive, and complete spectrum of professional surveying and mapping services. We look forward to continuing our relationship with BPA as a Master Contractor in the upcoming years. Please do not hesitate to contact us if you have any questions or require clarification of this proposal.

Sincerely,
Ruen-Yeager & Associates, Inc.

(b) (6) [redacted]

Darius L. Ruen, P.E.

Ruen-Yeager & Associates, Inc.

RFO 3553 AMENDMENT 001
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 11, 2015

The purpose of this modification is to revise the Instruction to Offerors, Attachment 001 and incorporate submitted contractor clarification questions and BPA responses.

A. Revise Instruction to Offerors, Submission of Offers as follows:

All offers shall be sent via email by January 4, 2016, no later than 3:00 PM to Kristi Carter at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov. No communication is authorized between the contractor and Bonneville Power representatives or employees other than the Contracting Officer's Representative, Tracey Albright, and the Contracting Officer's Assistant, Kristi Carter. Clarification questions may be submitted via email to Kristi Cater at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov no later than December 21, 2015, 3:00 p.m. PDT. Answers to clarification questions will be posted as an amendment to the solicitation via email to all potential offerors. If you decide not to submit an offer, it is requested that you contact Kristi Carter and Tracey Albright.

B. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 8 SUBCONTRACTING PLAN, as follows:

Provide an estimated dollar amount or percentage of work that may be awarded to subcontractors who are one of the supplier diversity program categories, or (2) a statement, with supporting reasons, that the nature of the contract does not offer subcontracting possibilities; state which disciplines would be performed in-house by your company and which may be assigned to subcontractors, if any. Identify qualifications of all subcontractors proposed, company name and key personnel. (Note: A detailed Subcontracting Plan may be required at time of award if applicable.

C. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 4 PAST PERFORMANCE A, as follows:

BPA focuses on information that demonstrates quality of performance relative to the complexity of the procurement under consideration. The offeror's references will assist BPA in collecting this information. References other than those identified by the offeror may be used by BPA. All such information may be used in the evaluation of the offeror's past performance.

D. Incorporate the following submitted contractor clarification questions, and BPA responses.

CONTRACTOR QUESTION #1: The subcontracting information on Attachment 1, page 6 appears to conflict with the instructions on Attachment 1, page 5: (page 6), please advise of the requirement.

BPA RESPONSE: See Item B in Amendment 001.

CONTRACTOR QUESTION #2: Attachment 1, page 5, item (4) Past Performance – requires the use of the "attached" Past Performance Reference Form. However, the form is not attached. Could you direct me to the correct form?

BPA RESPONSE: Refer to Item C in Amendment 001.

CONTRACTOR QUESTION #3: Is it permitted to use BPA projects and references/personnel on the Past Performance section/form? Or should all of the Past Performance project be from non-BPA clients?

BPA RESPONSE: BPA references are acceptable.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: RUEN YEAGER & ASSOCIATES, INC

Signature (by person authorized to sign): (b) (6) [redacted]

Date signed: 12/30/15

RFO 3553 AMENDMENT 002
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 30, 2015

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. **The offer due date has been extended to January 11, 2016 at 3:00 PM.**

B. **Incorporate the following submitted contractor clarification questions and BPA responses.**

CONTRACTOR QUESTION #1: Under Professional Qualifications – Item 1 references the person in responsible charge but also references the resumes of key personnel and states recent projects that they have overseen. Does this include Project Managers and Project Surveyors only or does it also include other key personnel that have managed key portions of a project?

BPA RESPONSE: Yes, Key Personnel are those individuals filling positions that oversee the whole project and/or specialized tasks of the project: Survey Managers, Project Surveyors, PLS's/RLS's, Survey Party Chiefs, and Land Survey Office Technicians.

CONTRACTOR QUESTION #2: Are examples of past projects desired or not?

BPA RESPONSE: Yes, the resumes should refer to past projects to address size, scope, and responsibilities and convey the Key individual's experience.

CONTRACTOR QUESTION #3: Does BPA have a preference of the type of electronic files (PDF, Word, etc) to be submitted? Is there a limit to file size?

BPA RESPONSE: The vendor can submit their responses to the RFO in either a PDF or Word format. The RFO 3553 Business Workbook and Technical Workbook shall be submitted in both the native Excel format and a PDF copy. The BPA email system has a limit of 10 mb's.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: KLEIN-YERGER & ASSOCIATES, INC
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 12/30/15

RFO 3553 AMENDMENT 003
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 4, 2016

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. **The offer due date has been extended to <u>January 18, 2016 at 3:00 PM.</u>**

B. **Incorporate the following submitted contractor clarification questions and BPA responses.**

CONTRACTOR QUESTION #1: Are we to add specialized equipment rates – i.e., ATV's, boats, UAV's, scanners, etc. – to the Business Workbook or leave them out altogether?

BPA RESPONSE: ATV's are a common specialized equipment that are regularly required to perform BPA work and can be added to the Business Workbook spreadsheet. All other specialized equipment will be priced out on an as needed basis at the time of a contract release or work assignment.

CONTRACTOR QUESTION #2: Is the selection panel the same for the RFO solicitation as it was for the SOQ solicitation?

BPA RESPONSE: The evaluation team is the same for the RFO as was for the RFQ, but the selection by the Contracting Officer, or Contracting Office, is based on evaluation team recommendations.

CONTRACTOR QUESTION #3: Can we add the requested equipment brand names and model numbers to the provided spreadsheet or would you like a separate spreadsheet with this information?

BPA RESPONSE: Yes, manufacture names and model names/models can be included in the Technical Workbook / Equipment worksheet for survey field equipment.

CONTRACTOR QUESTION #4: Please clarify under Technical Approach bullet one, is an "existing heavily wooded Substation Parcel" an existing substation to be expanded or just and existing parcel for a new substation?

BPA RESPONSE: This task should be interpreted as a Boundary and Topographic Survey for an expansion of an existing BPA substation on to an adjacent heavily wooded BPA fee owned parcel that is not physically delineated and monumented.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: RUKEN-YEAGER & ASSOCIATES, INC.
Signature (by person authorized to sign): (b) (6)
Date signed: 1/4/16

RFO 3553 AMENDMENT 004
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 12, 2016

The purpose of this amendment is to incorporate a submitted contractor clarification question and BPA's response.

A. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: We anticipate that allowing more than one pricing sheet will provide positive pricing for BPA by using subcontractors that are closer to work in some of your service areas. Will BPA accept different pricing workbooks, to reflect ours and our subs information, or do we need to develop one set of rates that will work for our entire team (prime and subcontractors)?

BPA RESPONSE: Vendors should only submit what has been requested in the "Instruction to Offerors" section of RFO 3553, but we can accept the submittal of additional Technical and Business Workbooks for subcontractors/partners. Each Prime Vendor must still have meet the Personnel requirements set out in the RFO without including subcontracting staff.

At a minimum, a core team comprised of the following personnel is to be available for BPA projects.

- Three Professional/Registered Land Surveyors licensed in one of the primary states within BPA's service area (Montana, Oregon, Idaho, & Washington) to act in a project surveyor and/or professional capacity. Each core team having licensees/registrants in two states within BPA's primary service area: Montana, Oregon, Idaho, & Washington.

- Two survey field crews; a two-person and a three person crew that can also act in the capacity of an office resource in assisting the PLS/RLS in research and processing/adjusting survey field data.

- Three survey office technicians for processing field data, creating reports, and CAD survey mapping duties; creating/updating survey and plan/profile maps.

- One staff member that is NGS OPUS-Projects certified.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: RUEN - YEAGER & ASSOCIATES, INC
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: 1/12/16

ATTACHMENT 2 -- REPRESENTATIONS AND CERTIFICATIONS

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TAXPAYER IDENTIFICATION NUMBER (4-1)
(DEC 98)(BPI 4.1.2.1)

NOTE:
(1) Taxpayer Identification Number (TIN) reporting does not apply to a Federal agency, a foreign government or a foreign business not engaged in business or trade or without an agent capable of receiving payment within the United States.
(2) The TIN for BPA is 93-0334712.

All offerors, other than noted above, are required to submit its Taxpayer Identification Number requested below in order to comply with the Department of Treasury payment processing requirements of 31 U.S.C. 3332 and 7701, and the reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service. If the resulting contract is subject to those requirements, the failure or refusal by the offeror to furnish the information may result in a suspension of payment and a thirty-one (31) percent reduction of payments otherwise due under the contract.

Taxpayer Identification Number _____.

TYPE OF BUSINESS ORGANIZATION (11-1)
(SEP 02)(BPI 11.10.2.1)

The offeror, by checking the applicable box, represents that-

(a) It operates as / / a corporation incorporated under the laws of the State of _____, / / an individual, / / a partnership, / / a nonprofit organization, or / / a joint venture; or

(b) It is a / / local, / / state, / / federally recognized Indian tribe, or / / other governmental entity, (*describe* _____); or

(c) If the offeror is a foreign entity, it operates as / / an individual, / / a partnership, / / a nonprofit organization, / / a joint venture, or / / a corporation, registered for business in _____ (country) and / / does / / does not have an office or fiscal paying agent in the United States; or

(d) It is / / a type of business organization not otherwise listed above (*describe* _____).

SUPPLIER DIVERSITY AWARD REPRESENTATION (8-1)
(OCT 13)(BPI 8.1.3)

(a) CO Fill-in:

NAICS CODE	Size Standard in Millions of Dollars **OR** Size Standards in Number of Employees
541370	**$15.0 M**

(b) The offeror represents that:

(1) it is /__/, is not /__/ a small business concern.

(2) it is /__/, is not /__/ a disadvantaged small business concern (this includes Native American owned small business, 8-A Certified or Hub-zone and any other disadvantaged small business concerns).

(3) it is /__/, is not /__/ a women-owned small business concern.

(4) it is /__/, is not /__/ a veteran-owned small business concern.

(5) it is /__/, is not /__/ a disabled veteran-owned small business concern.

BUY AMERICAN CERTIFICATE (9-1)
(OCT 93)(BPI 9.1.6)

(a) The Offeror certifies that each end product, except the end products listed below, is a domestic end product (as defined in the clause entitled "Buy American Act - Supplies"), and that components of unknown origin have been considered to have been mined, produced, or manufactured outside the United States.

EXCLUDED END PRODUCTS AND COUNTRY OF ORIGIN
(List as necessary)

_____

_____

_____

(b) An Offeror who proposes to furnish domestic source end products containing components of foreign origin the cost of which exceeds 15 percent of the offered price, shall furnish in the spaces below a complete list of components of foreign origin in sufficient detail to clearly identify each.

FOREIGN COMPONENTS AND POINT OF ORIGIN

_____

_____

_____

The Offeror represents that the total cost of the above components of foreign origin, including applicable duty and transportation costs, constitutes ____ percent of the cost of all components to be incorporated in the end products being furnished. The Offeror agrees to furnish, for the exclusive use of BPA, such additional information as the Contracting Officer may request in order to verify the foregoing in evaluating the offer.

The Offeror agrees that no components of foreign origin, other than those listed above, will be incorporated in the end products being furnished without written approval of the Contracting Officer.

(c) Where an Offeror fails to complete the representation of foreign content provision above, and in the absence of any previous experience with the offeror or information to the contrary, BPA assumes that domestic firms intend to furnish domestic end products and that foreign firms intend to furnish products of foreign origin.

OFFEROR REPRESENTATIONS AND CERTIFICATIONS – PROHIBITED FOREIGN TRANSACTIONS (9-9) (OCT 13)(BPI 9.3.2.1)

(a) The representations in (b)(1) and certifications in (b)(2) and b(3) do not apply if the procurement is covered by a trade agreement as defined in BPI 9.4.2 and the offeror has certified that all the offered products are designated country end products or designated country material.

(b) By submission of its offer, the offeror:

(1) Represents, to the best of its knowledge that the offeror does not export any sensitive technology as defined in Pub. L. 111-195 Section 106 to the government of Iran or any entities or individuals owned or controlled by, or acting on the behalf of the government of Iran.

(2) Certifies that the offeror, or any person owned of controlled by the offeror, does not engage in activities that may result in sanctions under Section 5 of the Iran Sanctions Act (Pub. L. 111-195 et seq.).

(3) Certifies that the offeror, and any person owned or controlled by the offeror, does not knowingly engage in any transaction that exceeds $3,000 with Iran's Revolutionary Guard Corps or any of its officials, agents, or affiliates, the property and interests in property of which are blocked pursuant to the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.)

(4) Certifies that the offeror does not conduct any restricted business operations in Sudan as defined in in the Sudan Accountability and Divestment Act of 2007 (Pub. L. 110-174).

RUEN-YEAGER & ASSOCIATES, INC.

Business Proposal Workbooks

1. Schedule of Prices

2. Key Personnel Breakdown of Costs

RUEN-YEAGER & ASSOCIATES, INC.

LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017			
1	Survey Manager	$ 128.75	N/A
2	Project Surveyor	$ 110.41	N/A
3	Survey Party Chief	$ 74.39	$ 74.39
4	Survey Technician	$ 68.44	$ 68.44
5	Survey Aide	$ 65.47	$ 65.47
6	Land Survey Office Technician	$ 77.37	$ 77.37
7	Drafter/CAD Operator II	$ 65.47	$ 65.47
8	Cartographic Technician	$ 77.37	$ 77.37
9	Clerical/Administration	$ 65.47	$ 65.47
10	GIS Technician	$ 77.37	$ 77.37
11	GIS Analyst	$ 128.75	N/A
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018			
12	Survey Manager	$ 131.97	N/A
13	Project Surveyor	$ 113.17	N/A
14	Survey Party Chief	$ 76.25	$ 76.25
15	Survey Technician	$ 70.15	$ 70.15
16	Survey Aide	$ 67.10	$ 67.10
17	Land Survey Office Technician	$ 79.30	$ 79.30
18	Drafter/CAD Operator II	$ 67.10	$ 67.10
19	Cartographic Technician	$ 79.30	$ 79.30
20	Clerical/Administration	$ 67.10	$ 67.10
21	GIS Technician	$ 79.30	$ 79.30
22	GIS Analyst	$ 131.97	N/A
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019			
23	Survey Manager	$ 135.27	N/A
24	Project Surveyor	$ 116.00	N/A
25	Survey Party Chief	$ 78.16	$ 78.16
26	Survey Technician	$ 71.91	$ 71.91
24	Survey Aide	$ 68.78	$ 68.78
28	Land Survey Office Technician	$ 81.29	$ 81.29
29	Drafter/CAD Operator II	$ 68.78	$ 68.78
30	Cartographic Technician	$ 81.29	$ 81.29
31	Clerical/Administration	$ 68.78	$ 68.78
32	GIS Technician	$ 81.29	$ 81.29
33	GIS Analyst	$ 135.27	N/A
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020			
34	Survey Manager	$ 138.65	N/A
35	Project Surveyor	$ 118.90	N/A
36	Survey Party Chief	$ 80.11	$ 80.11
37	Survey Technician	$ 73.70	$ 73.70
38	Survey Aide	$ 70.50	$ 70.50
39	Land Survey Office Technician	$ 83.32	$ 83.32
40	Drafter/CAD Operator II	$ 70.50	$ 70.50
41	Cartographic Technician	$ 83.32	$ 83.32
42	Clerical/Administration	$ 70.50	$ 70.50
43	GIS Technician	$ 83.32	$ 83.32
44	GIS Analyst	$ 138.65	N/A
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021			
45	Survey Manager	$ 142.12	N/A
46	Project Surveyor	$ 121.88	N/A
47	Survey Party Chief	$ 82.12	$ 82.12
48	Survey Technician	$ 75.55	$ 75.55
49	Survey Aide	$ 72.26	$ 72.26
50	Land Survey Office Technician	$ 85.40	$ 85.40
51	Drafter/CAD Operator II	$ 72.26	$ 72.26
52	Cartographic Technician	$ 85.40	$ 85.40
53	Clerical/Administration	$ 72.26	$ 72.26
54	GIS Technician	$ 85.40	$ 85.40
55	GIS Analyst	$ 142.12	N/A

RUEN-YEAGER & ASSOCIATES, INC.

BASE YEAR FEBRUARY 1, 2016 - JANUARY 31, 2017								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 45.43	$ 71.62	$ 11.70	$ 128.75	N/A	N/A	N/A	N/A
Project Surveyor	$ 38 96	$ 61.42	$ 10.04	$ 110.41	N/A	N/A	N/A	N/A
Survey Party Chief	$ 26 25	$ 41.38	$ 6.76	$ 74.39	$ 39.38	$ 28.25	$ 6.76	$ 74.39
Survey Technician	$ 24.15	$ 38.07	$ 6.22	$ 68.44	$ 36.23	$ 25.99	$ 6.22	$ 68.44
Survey Aide	$ 23.10	$ 36.41	$ 5.95	$ 65.47	$ 34.65	$ 24.86	$ 5.95	$ 65.47
Land Survey Office Technician	$ 27 30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
Drafter/CAD Operator II	$ 23.10	$ 36.41	$ 5.95	$ 65.47	$ 34.65	$ 24.86	$ 5.95	$ 65.47
Cartographic Technician	$ 27 30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
Clerical/Administration	$ 23.10	$ 36.41	$ 5.95	$ 65.47	$ 34.65	$ 24.86	$ 5.95	$ 65.47
GIS Technician	$ 27 30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
GIS Analyst	$ 45.43	$ 71.62	$ 11.70	$ 128.75	N/A	N/A	N/A	N/A
OPTION YEAR ONE FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 46 57	$ 73.41	$ 12.00	$ 131.97	N/A	N/A	N/A	N/A
Project Surveyor	$ 39 93	$ 62.95	$ 10.29	$ 113.17	N/A	N/A	N/A	N/A
Survey Party Chief	$ 26 91	$ 42.42	$ 6.93	$ 76.25	$ 40.36	$ 28.96	$ 6.93	$ 76.25
Survey Technician	$ 24.75	$ 39.02	$ 6.38	$ 70.15	$ 37.13	$ 26.64	$ 6.38	$ 70.15
Survey Aide	$ 23 68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
Land Survey Office Technician	$ 27 98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
Drafter/CAD Operator II	$ 23 68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
Cartographic Technician	$ 27 98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
Clerical/Administration	$ 23 68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
GIS Technician	$ 27 98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
GIS Analyst	$ 46 57	$ 73.41	$ 12.00	$ 131.97	N/A	N/A	N/A	N/A
OPTION YEAR TWO FEBRUARY 1, 2018 - JANUARY 31, 2019								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 47.73	$ 75.24	$ 12.30	$ 135.27	N/A	N/A	N/A	N/A
Project Surveyor	$ 40 93	$ 64.53	$ 10.55	$ 116.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 27 58	$ 43.48	$ 7.11	$ 78.16	$ 41.37	$ 29.68	$ 7.11	$ 78.16
Survey Technician	$ 25 37	$ 40.00	$ 6.54	$ 71.91	$ 38.06	$ 27.31	$ 6.54	$ 71.91
Survey Aide	$ 24 27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
Land Survey Office Technician	$ 28 68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
Drafter/CAD Operator II	$ 24 27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
Cartographic Technician	$ 28 68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
Clerical/Administration	$ 24 27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
GIS Technician	$ 28 68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
GIS Analyst	$ 47.73	$ 75.24	$ 12.30	$ 135.27	N/A	N/A	N/A	N/A
OPTION YEAR THREE FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 48 92	$ 77.12	$ 12.60	$ 138.65	N/A	N/A	N/A	N/A
Project Surveyor	$ 41 96	$ 66.14	$ 10.81	$ 118.90	N/A	N/A	N/A	N/A
Survey Party Chief	$ 28 27	$ 44.56	$ 7.28	$ 80.11	$ 42.40	$ 30.42	$ 7.28	$ 80.11
Survey Technician	$ 26 01	$ 41.00	$ 6.70	$ 73.70	$ 39.01	$ 27.99	$ 6.70	$ 73.70
Survey Aide	$ 24 88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
Land Survey Office Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
Drafter/CAD Operator II	$ 24 88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
Cartographic Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
Clerical/Administration	$ 24 88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
GIS Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
GIS Analyst	$ 48 92	$ 77.12	$ 12.60	$ 138.65	N/A	N/A	N/A	N/A
OPTION YEAR FOUR FEBRUARY 1, 2020 - JANUARY 31, 2021								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 50.15	$ 79.05	$ 12.92	$ 142.12	N/A	N/A	N/A	N/A
Project Surveyor	$ 43 00	$ 67.79	$ 11.08	$ 121.88	N/A	N/A	N/A	N/A
Survey Party Chief	$ 28 98	$ 45.68	$ 7.47	$ 82.12	$ 43.46	$ 31.18	$ 7.46	$ 82.12
Survey Technician	$ 26 66	$ 42.02	$ 6.87	$ 75.55	$ 39.99	$ 28.69	$ 6.87	$ 75.55
Survey Aide	$ 25 50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
Land Survey Office Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
Drafter/CAD Operator II	$ 25 50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
Cartographic Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
Clerical/Administration	$ 25 50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
GIS Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
GIS Analyst	$ 50.15	$ 79.05	$ 12.92	$ 142.12	N/A	N/A	N/A	N/A

Subcontractor

OBEC Consulting Engineers

Business Proposal Workbooks

1. Schedule of Prices

2. Key Personnel Breakdown of Costs

OBEC Consulting Engineers

LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017			
1	Survey Manager	$ 157.41	N/A
2	Project Surveyor	$ 113.69	N/A
3	Survey Party Chief	$ 96.20	$ 112.77
4	Survey Technician	$ 78.71	$ 92.27
5	Survey Aid	$ 61.94	$ 72.62
6	Drafter / CAD Operator II	$ 78.71	$ 92.27
7	Land Survey Office Technician	$ 96.20	$ 112.77
8	Cartographic Technician	$ 78.71	$ 92.27
9	GIS Technician	$ 93.28	$ 109.35
10	Clerical / Administration	$ 71.42	$ 83.72
11	GIS Analyst	$ 111.50	$ 130.71
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018			
12	Project Manager	$ 162.00	N/A
13	Registered Land Surveyor	$ 117.00	N/A
14	Survey Party Chief	$ 99.00	$ 116.05
15	Survey Technician	$ 81.00	$ 94.95
16	Survey Aid	$ 63.75	$ 74.73
17	Drafter / CAD Operator II	$ 81.00	$ 94.95
18	Land Survey Office Technician	$ 99.00	$ 116.05
19	Cartographic Technician	$ 81.00	$ 94.95
20	GIS Technician	$ 96.00	$ 112.54
21	Clerical / Administration	$ 73.50	$ 86.16
22	GIS Analyst	$ 114.75	$ 134.52
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019			
23	Project Manager	$ 166.71	N/A
24	Registered Land Surveyor	$ 120.40	N/A
25	Survey Party Chief	$ 101.88	$ 119.44
26	Survey Technician	$ 83.36	$ 97.72
24	Survey Aid	$ 65.61	$ 76.91
28	Drafter / CAD Operator II	$ 83.36	$ 97.72
29	Land Survey Office Technician	$ 101.88	$ 119.44
30	Cartographic Technician	$ 83.36	$ 97.72
31	GIS Technician	$ 98.79	$ 115.82
32	Clerical / Administration	$ 75.64	$ 88.67
33	GIS Analyst	$ 118.09	$ 138.44
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020			
34	Project Manager	$ 171.57	N/A
35	Registered Land Surveyor	$ 123.91	N/A
36	Survey Party Chief	$ 104.85	$ 122.91
37	Survey Technician	$ 85.79	$ 100.57
38	Survey Aid	$ 67.52	$ 79.15
39	Drafter / CAD Operator II	$ 85.79	$ 100.57
40	Land Survey Office Technician	$ 104.85	$ 122.91
41	Cartographic Technician	$ 85.79	$ 100.57
42	GIS Technician	$ 101.67	$ 119.19
43	Clerical / Administration	$ 77.84	$ 91.25
44	GIS Analyst	$ 121.53	$ 142.47
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021			
45	Project Manager	$ 176.57	N/A
46	Registered Land Surveyor	$ 127.52	N/A
47	Survey Party Chief	$ 107.90	$ 126.49
48	Survey Technician	$ 88.28	$ 103.50
49	Survey Aid	$ 69.48	$ 81.45
50	Drafter / CAD Operator II	$ 88.28	$ 103.50
51	Land Survey Office Technician	$ 107.90	$ 126.49
52	Cartographic Technician	$ 88.28	$ 103.50
53	GIS Technician	$ 104.63	$ 122.66
54	Clerical / Administration	$ 80.11	$ 93.91
55	GIS Analyst	$ 125.07	$ 146.62

OBEC Consulting Engineers

BASE YEAR FEBRUARY 1, 2016 - JANUARY 31, 2017								
	2.91%	165.00%	10.00%		117.23%	165.00%	10.00%	
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
Survey Manager	$ 54 00	$ 89.10	$ 14 31	$ 157.41	N/A	N/A	N/A	N/A
Project Surveyor	$ 39 00	$ 64.35	$ 10 34	$ 113.69	N/A	N/A	N/A	N/A
Survey Party Chief	$ 33 00	$ 54.45	$ 8.75	$ 96.20	$ 38.69	$ 63 83	$ 10 25	$ 112.77
Survey Technician	$ 27 00	$ 44.55	$ 7.16	$ 78.71	$ 31.65	$ 52 23	$ 8 39	$ 92.27
Survey Aid	$ 21 25	$ 35.06	$ 5 63	$ 61.94	$ 24.91	$ 41.10	$ 6 60	$ 72.62
Drafter / CAD Operator II	$ 27 00	$ 44.55	$ 7.16	$ 78.71	$ 31.65	$ 52 23	$ 8 39	$ 92.27
Land Survey Office Technician	$ 33 00	$ 54.45	$ 8.75	$ 96.20	$ 38.69	$ 63 83	$ 10 25	$ 112.77
Cartographic Technician	$ 27 00	$ 44.55	$ 7.16	$ 78.71	$ 31.65	$ 52 23	$ 8 39	$ 92.27
GIS Technician	$ 32 00	$ 52.80	$ 8.48	$ 93.28	$ 37.51	$ 61 90	$ 9 94	$ 109.35
Clerical / Administration	$ 24 50	$ 40.43	$ 6.49	$ 71.42	$ 28.72	$ 47 39	$ 7 61	$ 83.72
GIS Analyst	$ 38 25	$ 63.11	$ 10.14	$ 111.50	$ 44.84	$ 73 99	$ 11 88	$ 130.71
OPTION YEAR ONE FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
Survey Manager	$ 55 57	$ 91.70	$ 14.73	$ 162.00	N/A	N/A	N/A	N/A
Project Surveyor	$ 40.14	$ 66.22	$ 10 64	$ 117.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 33 96	$ 56.04	$ 9 00	$ 99.00	$ 39.81	$ 65 69	$ 10 55	$ 116.05
Survey Technician	$ 27.79	$ 45.85	$ 7 36	$ 81.00	$ 32.57	$ 53.75	$ 8 63	$ 94.95
Survey Aid	$ 21 87	$ 36.08	$ 5 80	$ 63.75	$ 25.64	$ 42 30	$ 6.79	$ 74.73
Drafter / CAD Operator II	$ 27.79	$ 45.85	$ 7 36	$ 81.00	$ 32.57	$ 53.75	$ 8 63	$ 94.95
Land Survey Office Technician	$ 33 96	$ 56.04	$ 9 00	$ 99.00	$ 39.81	$ 65 69	$ 10 55	$ 116.05
Cartographic Technician	$ 27.79	$ 45.85	$ 7 36	$ 81.00	$ 32.57	$ 53.75	$ 8 63	$ 94.95
GIS Technician	$ 32 93	$ 54.34	$ 8.73	$ 96.00	$ 38.61	$ 63.70	$ 10 23	$ 112.54
Clerical / Administration	$ 25 21	$ 41.60	$ 6 68	$ 73.50	$ 29.56	$ 48.77	$ 7 83	$ 86.16
GIS Analyst	$ 39 36	$ 64.95	$ 10.43	$ 114.75	$ 46.15	$ 76.14	$ 12 23	$ 134.52
OPTION YEAR TWO FEBRUARY 1, 2018 - JANUARY 31, 2019								
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
Survey Manager	$ 57.19	$ 94.37	$ 15.16	$ 166.71	N/A	N/A	N/A	N/A
Project Surveyor	$ 41 31	$ 68.15	$ 10 95	$ 120.40	N/A	N/A	N/A	N/A
Survey Party Chief	$ 34 95	$ 57.67	$ 9 26	$ 101.88	$ 40.97	$ 67 60	$ 10 86	$ 119.44
Survey Technician	$ 28 60	$ 47.18	$ 7 58	$ 83.36	$ 33.52	$ 55 31	$ 8 88	$ 97.72
Survey Aid	$ 22 51	$ 37.13	$ 5 96	$ 65.61	$ 26.38	$ 43 53	$ 6 99	$ 76.91
Drafter / CAD Operator II	$ 28 60	$ 47.18	$ 7 58	$ 83.36	$ 33.52	$ 55 31	$ 8 88	$ 97.72
Land Survey Office Technician	$ 34 95	$ 57.67	$ 9 26	$ 101.88	$ 40.97	$ 67 60	$ 10 86	$ 119.44
Cartographic Technician	$ 28 60	$ 47.18	$ 7 58	$ 83.36	$ 33.52	$ 55 31	$ 8 88	$ 97.72
GIS Technician	$ 33 89	$ 55.92	$ 8 98	$ 98.79	$ 39.73	$ 65 56	$ 10 53	$ 115.82
Clerical / Administration	$ 25 95	$ 42.81	$ 6 88	$ 75.64	$ 30.42	$ 50.19	$ 8 06	$ 88.67
GIS Analyst	$ 40 51	$ 66.84	$ 10.74	$ 118.09	$ 47.49	$ 78 36	$ 12 59	$ 138.44
OPTION YEAR THREE FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
Survey Manager	$ 58 86	$ 97.12	$ 15 60	$ 171.57	N/A	N/A	N/A	N/A
Project Surveyor	$ 42 51	$ 70.14	$ 11 26	$ 123.91	N/A	N/A	N/A	N/A
Survey Party Chief	$ 35 97	$ 59.35	$ 9 53	$ 104.85	$ 42.17	$ 69 57	$ 11.17	$ 122.91
Survey Technician	$ 29.43	$ 48.56	$ 7 80	$ 85.79	$ 34.50	$ 56 92	$ 9.14	$ 100.57
Survey Aid	$ 23.16	$ 38.22	$ 6.14	$ 67.52	$ 27.15	$ 44 80	$ 7 20	$ 79.15
Drafter / CAD Operator II	$ 29.43	$ 48.56	$ 7 80	$ 85.79	$ 34.50	$ 56 92	$ 9.14	$ 100.57
Land Survey Office Technician	$ 35 97	$ 59.35	$ 9 53	$ 104.85	$ 42.17	$ 69 57	$ 11.17	$ 122.91
Cartographic Technician	$ 29.43	$ 48.56	$ 7 80	$ 85.79	$ 34.50	$ 56 92	$ 9.14	$ 100.57
GIS Technician	$ 34 88	$ 57.55	$ 9 24	$ 101.67	$ 40.89	$ 67.47	$ 10 84	$ 119.19
Clerical / Administration	$ 26.70	$ 44.06	$ 7 08	$ 77.84	$ 31.31	$ 51 65	$ 8 30	$ 91.25
GIS Analyst	$ 41 69	$ 68.79	$ 11 05	$ 121.53	$ 48.87	$ 80 64	$ 12 95	$ 142.47
OPTION YEAR FOUR FEBRUARY 1, 2020 - JANUARY 31, 2021								
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
Survey Manager	$ 60 57	$ 99.94	$ 16 05	$ 176.57	N/A	N/A	N/A	N/A
Project Surveyor	$ 43.75	$ 72.18	$ 11 59	$ 127.52	N/A	N/A	N/A	N/A
Survey Party Chief	$ 37 02	$ 61.08	$ 9 81	$ 107.90	$ 43.39	$ 71 60	$ 11 50	$ 126.49
Survey Technician	$ 30 29	$ 49.97	$ 8 03	$ 88.28	$ 35.50	$ 58 58	$ 9.41	$ 103.50
Survey Aid	$ 23 84	$ 39.33	$ 6 32	$ 69.48	$ 27.94	$ 46.11	$ 7.40	$ 81.45
Drafter / CAD Operator II	$ 30 29	$ 49.97	$ 8 03	$ 88.28	$ 35.50	$ 58 58	$ 9.41	$ 103.50
Land Survey Office Technician	$ 37 02	$ 61.08	$ 9 81	$ 107.90	$ 43.39	$ 71 60	$ 11 50	$ 126.49
Cartographic Technician	$ 30 29	$ 49.97	$ 8 03	$ 88.28	$ 35.50	$ 58 58	$ 9.41	$ 103.50
GIS Technician	$ 35 89	$ 59.23	$ 9 51	$ 104.63	$ 42.08	$ 69.43	$ 11.15	$ 122.66
Clerical / Administration	$ 27.48	$ 45.35	$ 7 28	$ 80.11	$ 32.22	$ 53.16	$ 8 54	$ 93.91
GIS Analyst	$ 42 91	$ 70.79	$ 11 37	$ 125.07	$ 50.30	$ 82 99	$ 13 33	$ 146.62

RUEN-YEAGER & ASSOCIATES, INC.

LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017			
1	Survey Manager	$ 128.75	N/A
2	Project Surveyor	$ 110.41	N/A
3	Survey Party Chief	$ 74.39	$ 74.39
4	Survey Technician	$ 68.44	$ 68.44
5	Survey Aide	$ 65.47	$ 65.47
6	Land Survey Office Technician	$ 77.37	$ 77.37
7	Drafter/CAD Operator II	$ 65.47	$ 65.47
8	Cartographic Technician	$ 77.37	$ 77.37
9	Clerical/Administration	$ 65.47	$ 65.47
10	GIS Technician	$ 77.37	$ 77.37
11	GIS Analyst	$ 128.75	N/A
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018			
12	Survey Manager	$ 131.97	N/A
13	Project Surveyor	$ 113.17	N/A
14	Survey Party Chief	$ 76.25	$ 76.25
15	Survey Technician	$ 70.15	$ 70.15
16	Survey Aide	$ 67.10	$ 67.10
17	Land Survey Office Technician	$ 79.30	$ 79.30
18	Drafter/CAD Operator II	$ 67.10	$ 67.10
19	Cartographic Technician	$ 79.30	$ 79.30
20	Clerical/Administration	$ 67.10	$ 67.10
21	GIS Technician	$ 79.30	$ 79.30
22	GIS Analyst	$ 131.97	N/A
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019			
23	Survey Manager	$ 135.27	N/A
24	Project Surveyor	$ 116.00	N/A
25	Survey Party Chief	$ 78.16	$ 78.16
26	Survey Technician	$ 71.91	$ 71.91
24	Survey Aide	$ 68.78	$ 68.78
28	Land Survey Office Technician	$ 81.29	$ 81.29
29	Drafter/CAD Operator II	$ 68.78	$ 68.78
30	Cartographic Technician	$ 81.29	$ 81.29
31	Clerical/Administration	$ 68.78	$ 68.78
32	GIS Technician	$ 81.29	$ 81.29
33	GIS Analyst	$ 135.27	N/A
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020			
34	Survey Manager	$ 138.65	N/A
35	Project Surveyor	$ 118.90	N/A
36	Survey Party Chief	$ 80.11	$ 80.11
37	Survey Technician	$ 73.70	$ 73.70
38	Survey Aide	$ 70.50	$ 70.50
39	Land Survey Office Technician	$ 83.32	$ 83.32
40	Drafter/CAD Operator II	$ 70.50	$ 70.50
41	Cartographic Technician	$ 83.32	$ 83.32
42	Clerical/Administration	$ 70.50	$ 70.50
43	GIS Technician	$ 83.32	$ 83.32
44	GIS Analyst	$ 138.65	N/A
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021			
45	Survey Manager	$ 142.12	N/A
46	Project Surveyor	$ 121.88	N/A
47	Survey Party Chief	$ 82.12	$ 82.12
48	Survey Technician	$ 75.55	$ 75.55
49	Survey Aide	$ 72.26	$ 72.26
50	Land Survey Office Technician	$ 85.40	$ 85.40
51	Drafter/CAD Operator II	$ 72.26	$ 72.26
52	Cartographic Technician	$ 85.40	$ 85.40
53	Clerical/Administration	$ 72.26	$ 72.26
54	GIS Technician	$ 85.40	$ 85.40
55	GIS Analyst	$ 142.12	N/A

RUEN-YEAGER & ASSOCIATES, INC.

BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 45.43	$ 71.62	$ 11.70	$ 128.75	N/A	N/A	N/A	N/A
Project Surveyor	$ 38.96	$ 61.42	$ 10.04	$ 110.41	N/A	N/A	N/A	N/A
Survey Party Chief	$ 26.25	$ 41.38	$ 6.76	$ 74.39	$ 39.38	$ 28.25	$ 6.76	$ 74.39
Survey Technician	$ 24.15	$ 38.07	$ 6.22	$ 68.44	$ 36.23	$ 25.99	$ 6.22	$ 68.44
Survey Aide	$ 23.10	$ 36.41	$ 5.95	$ 65.47	$ 34.65	$ 24.86	$ 5.95	$ 65.47
Land Survey Office Technician	$ 27.30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
Drafter/CAD Operator II	$ 23.10	$ 36.41	$ 5.95	$ 65.47	$ 34.65	$ 24.86	$ 5.95	$ 65.47
Cartographic Technician	$ 27.30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
Clerical/Administration	$ 23.10	$ 36.41	$ 5.95	$ 65.47	$ 34.65	$ 24.86	$ 5.95	$ 65.47
GIS Technician	$ 27.30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
GIS Analyst	$ 45.43	$ 71.62	$ 11.70	$ 128.75	N/A	N/A	N/A	N/A
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 46.57	$ 73.41	$ 12.00	$ 131.97	N/A	N/A	N/A	N/A
Project Surveyor	$ 39.93	$ 62.95	$ 10.29	$ 113.17	N/A	N/A	N/A	N/A
Survey Party Chief	$ 26.91	$ 42.42	$ 6.93	$ 76.25	$ 40.36	$ 28.96	$ 6.93	$ 76.25
Survey Technician	$ 24.75	$ 39.02	$ 6.38	$ 70.15	$ 37.13	$ 26.64	$ 6.38	$ 70.15
Survey Aide	$ 23.68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
Land Survey Office Technician	$ 27.98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
Drafter/CAD Operator II	$ 23.68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
Cartographic Technician	$ 27.98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
Clerical/Administration	$ 23.68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
GIS Technician	$ 27.98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
GIS Analyst	$ 46.57	$ 73.41	$ 12.00	$ 131.97	N/A	N/A	N/A	N/A
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 47.73	$ 75.24	$ 12.30	$ 135.27	N/A	N/A	N/A	N/A
Project Surveyor	$ 40.93	$ 64.53	$ 10.55	$ 116.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 27.58	$ 43.48	$ 7.11	$ 78.16	$ 41.37	$ 29.68	$ 7.11	$ 78.16
Survey Technician	$ 25.37	$ 40.00	$ 6.54	$ 71.91	$ 38.06	$ 27.31	$ 6.54	$ 71.91
Survey Aide	$ 24.27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
Land Survey Office Technician	$ 28.68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
Drafter/CAD Operator II	$ 24.27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
Cartographic Technician	$ 28.68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
Clerical/Administration	$ 24.27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
GIS Technician	$ 28.68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
GIS Analyst	$ 47.73	$ 75.24	$ 12.30	$ 135.27	N/A	N/A	N/A	N/A
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 48.92	$ 77.12	$ 12.60	$ 138.65	N/A	N/A	N/A	N/A
Project Surveyor	$ 41.96	$ 66.14	$ 10.81	$ 118.90	N/A	N/A	N/A	N/A
Survey Party Chief	$ 28.27	$ 44.56	$ 7.28	$ 80.11	$ 42.40	$ 30.42	$ 7.28	$ 80.11
Survey Technician	$ 26.01	$ 41.00	$ 6.70	$ 73.70	$ 39.01	$ 27.99	$ 6.70	$ 73.70
Survey Aide	$ 24.88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
Land Survey Office Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
Drafter/CAD Operator II	$ 24.88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
Cartographic Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
Clerical/Administration	$ 24.88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
GIS Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
GIS Analyst	$ 48.92	$ 77.12	$ 12.60	$ 138.65	N/A	N/A	N/A	N/A
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021								
Job Description	**Salary Base Rate**	**Overhead (157.64%)**	**Profit (10%)**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead (71.75%)**	**OT Profit (10%)**	**OT Contract Billing Rate**
Survey Manager	$ 50.15	$ 79.05	$ 12.92	$ 142.12	N/A	N/A	N/A	N/A
Project Surveyor	$ 43.00	$ 67.79	$ 11.08	$ 121.88	N/A	N/A	N/A	N/A
Survey Party Chief	$ 28.98	$ 45.68	$ 7.47	$ 82.12	$ 43.46	$ 31.18	$ 7.46	$ 82.12
Survey Technician	$ 26.66	$ 42.02	$ 6.87	$ 75.55	$ 39.99	$ 28.69	$ 6.87	$ 75.55
Survey Aide	$ 25.50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
Land Survey Office Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
Drafter/CAD Operator II	$ 25.50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
Cartographic Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
Clerical/Administration	$ 25.50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
GIS Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
GIS Analyst	$ 50.15	$ 79.05	$ 12.92	$ 142.12	N/A	N/A	N/A	N/A

TECHNICAL/MANAGEMENT PROPOSAL ITEM #3: EQUIPMENT											TECHNICAL/MANAGEMENT PROPOSAL ITEM #3: EQUIPMENT								TECHNICAL/MANAGEMENT PROPOSAL ITEM #3: EQUIPMENT											
	EQUIPMENT (Indicate Quantity)										EQUIPMENT (Indicate Quantity)								EQUIPMENT (Indicate Quantity)											
OFFICE LOCATION(S) (City, State)	BENTLEY MICROSTATION V8i	BENTLEY MAP V8i	BENTLEY POWER INROADS V8i	BENTLEY INROADS V8i	BENTLEY INROADS SURVEY V8i	BENTLEY DESCARTES V8i	AUTODESK INFRASTRUCTURE SUITE	ESRI ARC MAP 10.3	TBC LICENSE VERSION 3.61	TRIMBLE PATHFINDER OFFICE	DATA COLLECTORS WITH TRIMBLE ACCESS	GPS RTK RECEIVER PAIR	3" TOTAL STATION WITH LONG RANGE REFLECTORLESS	GPS RTN RECEIVER WSRN	GPS STATIC RECEIVER	RESOURCE GRADE GPS SYSTEMS	DIGITAL OR AUTOMATIC LEVELS	W.S.R.N. LIC. W/MIFI AND/OR CELL PHONE CAPABILITY	KONICA MINOLTA BIZHUB COPIERS	DESKTOP COMPUTER	LAPTOP	OCE MODEL TDS 400 SCANNER/PLOTTER	4WD VEHICLE W/CELL, TIRE CHAINS, STANDARD SURVEYING HAND TOOLS	MAGNETIC LOCATORS	TWO WAY RADIOS	CHAIN SAWS	DIGITAL CAMERAS	SCIENTIFIC CALCULATORS	OPUS PROJECTS CERTIFIED USERS	4 WHEELER AND TOW TRAILER
Sandpoint, Idaho	*2*	*1*	*1*	*1*	*1*	*1*	*2*	*1*	*2*	*1*	*(1)Trimble TSC3 Controller with Access Version 2015.21*	*(1)Trimble R10 GNSS Receivers, Base & Rover Capable* *(1) Trimble R8 GNSS Model 3 Reciever Base & Rover*	*(1)Trimble M3 Total Stations w/Reflectorless Functions*	*(2) Trimble R10 GNSS Receivers, Base & Rover Capable* *(1) Trimble R8 GNSS Model 3 Reciever Base & Rover*	*(2) Trimble R10 GNSS Receivers, Base & Rover Capable* *(1) Trimble R8 GNSS Model 3 Reciever Base & Rover* *(1) Trimble R8 Model 1 Receiver Rover* *(2) Trimble 5700 GPS Receivers*	*(1) Trimble GEO 7X Handheld*	*(1) Trimble DiNi Electronic Digital Level* *(3) Topcon/ Sokkia Auto Levels*	*4*	*1*	*5*	*5*	*1*	*3*	*2*	*6*	*2*	*6*	*4*	*3*	*2*
Coeur d'Alene, Idaho	*2*	*1*	*0*	*1*	*0*	*0*	*2*	*1*	*1*	*0*	*(1)Trimble TSC3 Controller with Access Version 2015.21*	*(1) Trimble R8 GNSS Model 2 Receiver Baes & Rover* *(1) Trimble R8 GNSS Model 2 Receiver Rover*	*(1)Trimble M3 Total Stations w/Reflectorless Functions*	*(1) Trimble R8 GNSS Model 2 Receiver Baes & Rover*	*(1) Trimble R8 GNSS Model 2 Reciever Base & Rover* *(1) Trimble R8 Model 1 Receiver Rover* *(2) Trimble 5700 GPS Receivers*	*(1) Trimble GEO 7X Handheld*	*(1) Trimble DiNi Electronic Digital Level* *(3) Topcon/ Sokkia Auto Levels*	*2*	*2*	*12*	*2*	*1*	*2*	*2*	*4*	*2*	*10*	*4*	*1*	*1*

RUEN-YEAGER & ASSOCIATES, INC.

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #4: LOCATION/GEOGRAPHICAL AREAS

NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASS. PER SOW	ALT. LABOR PER SOW CLASS	COMPETENT USER OF THE FOLLOWING: (1.µV8i, 2.µV8i In-Roads, 3.TBC, 4.Trimble Access, 5. OPUS Projects)
Richard E. Waltrip, PLS	*Coeur d'Alene, Idaho*	*Survey Manager*	*Project Surveyor, GIS Analyst*	
Gilbert C. Bailey, PLS	*Sandpoint, Idaho*	*Project Surveyor*	*Survey Manager, Land Survey Office Technician*	*1, 3, 4, 5*
Steven R. Sprague, PLS	*Coeur d'Alene, Idaho*	*Project Surveyor*	*Land Survey Office Technician, Survey Party Chief*	*3, 4, 5*
Steven J. Binnall, PLS	*Sandpoint, Idaho*	*Project Surveyor*	*Land Survey Office Technician, Survey Party Chief*	*1, 2, 3, 4, 5*
Darrel G. Ramus, PLS	*Coeur d'Alene, Idaho*	*Project Surveyor*	*GIS Analyst*	*1, 3, 4, 5*
John H. Kinney, PLS	*Coeur d'Alene, Idaho*	*Project Surveyor*		
Bruce L. Clark	*Sandpoint, Idaho*	*Land Survey Office Technician*	*Cartographic Technician, GIS Technician, Drafter/Cad Operator II*	*1, 2, 3*
Corey J. Vogel	*Sandpoint, Idaho*	*Land Survey Office Technician*	*Cartographic Technician, GIS Technician, Drafter/Cad Operator II*	*1, 2, 3*
Stefani D. Mason	*Coeur d'Alene, Idaho*	*GIS Technician*	*Land Survey Office Technician, Cartographic Technician, Drafter/Cad Operator II*	*1, 2*
Joseph E. Mitchell	*Coeur d'Alene, Idaho*	*Drafter/Cad Operator II*	*Survey Aide*	
Lisa M. Adair	*Sandpoint, Idaho*	*Drafter/Cad Operator II*	*GIS Technician, Survey Aide*	
Don D. Crawford	*Sandpoint, Idaho*	*Survey Party Chief*	*Land Survey Office Technician, Drafter/Cad Operator II*	*3, 4, 5*
James T. Cheslic	*Sandpoint, Idaho*	*Survey Party Chief*	*Survey Technician*	*4*
F. David Higgins	*Sandpoint, Idaho*	*Survey Technician*	*Survey Party Chief, Survey Aide*	*4*
Brent G.Gruenhagen	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Party Chief, Survey Aide*	*4*
Scott Kirking	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Aide*	*4*
Peter Wilson	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Aide*	*4*
Frank C. Heilman	*Coeur d'Alene, Idaho*	*Survey Technician*	*Survey Aide*	
Kimberley I. Williams	*Coeur d'Alene, Idaho*	*Survey Aide*		
Gregg Anderson	*Sandpoint, Idaho*	*Survey Aide*		
Matt J. Harwood	*Coeur d'Alene, Idaho*	*Survey Aide*		
Jessica S. Brinkmeier	*Coeur d'Alene, Idaho*	*Clerical/Administration*		
Kirsten M. Nickerson	*Coeur d'Alene, Idaho*	*Clerical/Administration*		

US Department Of Energy

BONNEVILLE

Power Administration

Indefinite Quantity Contract For
Survey & Mapping Services



Technical/Management Proposal

OBEC CONSULTING ENGINEERS

RFO no. 3553
January 18, 2016

OBEC CONSULTING ENGINEERS

EUGENE, OR
Corporate Office
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LAKE OSWEGO, OR
503.620.6103

SALEM, OR
503.589.4100

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VANCOUVER, WA
360.314.2391

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January 18, 2016

Attn: Tracey Albright, NSSV-4400-2
Tittle
Bonneville Power Administration
P.O. Box 61409
Vancouver, WA 98666-1409

RE: RFO No. 3553 – Proposal for Professional Survey and Mapping Services

Dear: Tracey

We know that the Bonneville Power Administration (BPA) is taking efforts to increase its power generation capabilities, distribution, and storage capacity for its customers, and be a good steward of the facilities, equipment, and lands in its care. Since 2009, we have assisted BPA in reaching these goals through timely, accurate survey services. We are eager to continue this relationship and help BPA meet new objectives in the years to come.

Successful execution on this Master Contract for **Professional Surveying and Mapping Services** requires three things:

- **Responsiveness**: Rapid response to Work Assignments (WA), quick deployment, and efficient work in the field.
- **Safety**: Appropriate clearances and safety training for working in and around BPA facilities and properties, with implementation leading to no injuries.
- **Reliable Products**: Accurate data collection and processing, high quality results, and adherence to BPA standards.

For the past six years, OBEC has demonstrated its ability to excel at the WAs from BPA. We have repeatedly met or exceeded expectations for timeliness, safety, and quality products on more than 130 surveying projects throughout BPA's service area. We have also provided innovation and expert guidance in preparing the pilot program and subsequent new process and training for completing radio tower inventories.

To continue our level of success with you, our internal team remains the same that has responded to your survey requests in the past. We have also included several federally designated small businesses to extend our geographic reach and increase our capacity, as needed. In accordance with BPA's instructions, we will provide maximum practicable opportunity for these businesses to participate in the performance of this contract. We are prepared to negotiate a Subcontracting Plan (BPI 8.3.3) to fulfill the priorities of the contract. Our team is highly qualified, flexible, fully-equipped, and located in key cities near BPA facilities. OBEC will provide solid leadership and project management in overseeing all of the projects under this contract.

As a nation, we face increasing energy demands, constrained funding, and tight delivery timelines. We understand how these pressures affect BPA, and are committed to assisting your efforts with the same level of responsiveness, safety, and attention to quality that you have come to expect from the OBEC team.

We look forward to working with you again. Please contact us with any questions about our submittal. Lawrence H. Fox is authorized to negotiate any contract that may result. Let us help you reach your goals.

Sincerely,

(b) (6) [redacted]

Jim Colton, PLS
Survey/Contract Manager

(b) (6) [redacted]

Lawrence H. Fox, PE
President

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1. ▪ Professional Qualifications

INTRODUCTION

During the past six years, the Bonneville Power Administration (BPA) has relied on OBEC Consulting Engineers (OBEC) to perform almost every type of survey task requested in the current RFO, often on short timeframes and in sites that require specialized access. We look forward to extending our successful working relationship with BPA.

Our survey staff can mobilize quickly to cover BPA's entire service area, and we have years of experience with BPA standards and practices. We also recently updated our Quality Assurance/Quality Control (QA/QC) plan, detailed in Part 6 of this proposal, to provide BPA with consistently high quality deliverables.

OBEC's surveyors consider themselves an extension of BPA staff, and we are integrated with BPA technologically through access to BPA's server, ProjectWise, and Logical Access (myPC, eGIS, LIS).

To supplement our in-house resources, we have teamed with the following skilled subconsultants to enhance our geographic coverage and provide opportunities for small and disadvantaged businesses to participate in the contract. Our subconsultant qualifications are detailed in the resumes section, and further information regarding our usage of subconsultants is detailed in our Subconsultant Plan.

APS Survey & Mapping. APS is a Veteran-Owned Small Business serving the Northwest from their office in Bellevue, Washington. They hold professional licenses in Washington, Idaho, and Oregon, and they offer relevant project experience with clients such as Puget Sound Energy and Seattle City Light.

Perigee Consulting. Perigee is a federally-designated small business based out of Utah. Their staff has decades of experience, and they have professional surveyors licensed in Utah and Nevada.

Alcantar & Associates. Alcantar is a federally-designated small business (8a) firm that can provide Survey Party Chief and Survey Technician support.

Ruen-Yeager & Associates, Inc. Ruen-Yeager is a team of professional land surveyors based in northern Idaho. Many of their surveyors have extensive BPA experience, which allows them to fit in seamlessly with project and BPA staff. Their staff includes professional surveyors registered in Idaho.

William Colisch, PLS. Based out of Grants Pass, Oregon, William Colisch has been providing surveying services for more than 34 years. He holds a PLS license in California and can quickly respond to any Work Assignments (WA) in that section of BPA's service area.



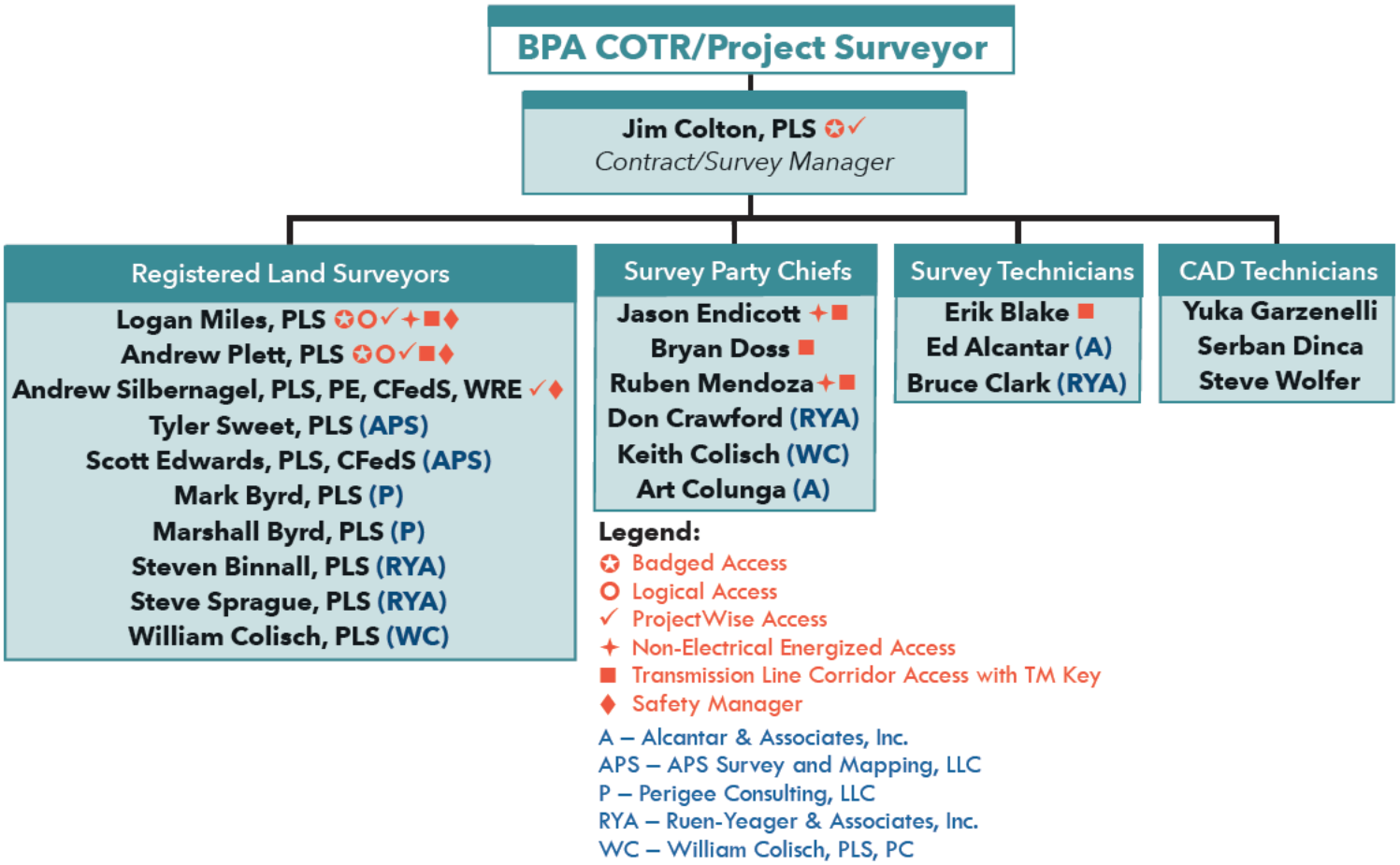
LiDAR verification survey at a transmission line tower.

LIST OF KEY PERSONNEL

The organizational chart on page 2 (***Figure 1***) lists team individuals by name and title. OBEC will provide project management for any given project from any one of our offices, including QA/QC and reviewing compliance with contract BPA forms, transmittals, timesheets, and procedures. We will begin each project with a kickoff meeting, where we will review scope tasks and survey processes and plan field work. We will hold interim meetings at stages of partial completion and for QA review response.

Our team is highly qualified, flexible, fully equipped, and located in key cities near BPA facilities. ***Figure 2*** on the next page shows our key staff, the states where they are licensed, and their federal designation. Our team includes 11 professional surveyors, and our staff will be available throughout the duration of the contract. OBEC will provide solid leadership and project management to oversee all of the projects under this contract.

Figure 1. Organizational Chart



The OBEC team maintains PLS licensing in the states where the majority of BPA's facilities, transmission lines, and related projects are located.

Figure 2. Key Personnel, Land Surveyor Registrations, and Company Federal Designations

Company	Federal Designation	Professional Land Surveyors	State Registrations
OBEC Consulting Engineers	None	Jim Colton, PLS	Oregon, Idaho
		Logan Miles, PLS	Oregon, Idaho
		Andrew Plett, PLS	Oregon, Washington
		Andrew Silbernagel, PLS	Oregon
Ruen-Yeager & Associates	None	Steven Sprague, PLS	Idaho
		Steven Binnall, PLS	Idaho
APS Survey & Mapping	Veteran-Owned Small Business	Tyler Sweet, PLS	Idaho, Oregon, Washington, Alaska
		Scott Edwards, PLS	Oregon, Washington
William Colisch PLS, PC	None	William Colisch, PLS	California, Oregon, Washington
Perigee Consulting	SBA 8a	Mark Byrd, PLS	Utah, Nevada, Colorado, Arizona
		Marshall Byrd, PLS	Utah

KEY PERSONNEL

The Key Personnel Experience table (***Figure 3)*** illustrates the specific experience of our key team members for each of the tasks identified in the RFO. The resumes beginning on the following page describe each individual's experience in detail and provide project examples, many of which resulted from OBEC's previous BPA Survey contract. Due to our years of BPA project work, we have ample experience in all of the required categories of work (labled A-K on the rable below and on each resume).

Figure 3. Key Personnel Experience Table

	Years of Experience	A. Route Surveying	B. Topographic Surveying	C. GPS Experience	D. Transmission Line Support Surveys	E. Resource Grade GPS Data Collection	F. Cadastral Survey	G. Legal Description & Exhibit Preparation	H. Survey Maps w/ MicroStation	I. Surveying in Sensitive Areas	J. GIS Attribute Data Collection	K. LiDAR Point Cloud Data
Jim Colton, PLS	37	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Logan Miles, PLS	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Andrew Plett, PLS	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Andrew Silbernagel, PLS	9	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Jason Endicott	19	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Ruben Mendoza	9	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Bryan Doss	11	✓	✓	✓	✓	✓	✓		✓	✓		
Erik Blake	10	✓	✓	✓	✓	✓	✓		✓	✓		
Yuka Garzenelli	11								✓			
Serban Dinca	15								✓			
Steve Wolfer	18								✓			
Steve Sprague, PLS	35	✓	✓	✓	✓	✓	✓	✓		✓		✓
Steve Binnall, PLS	22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Don Crawford	35	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bruce Clark	18									✓	✓	✓
Art Colunga	7	✓	✓	✓	✓	✓			✓	✓	✓	
Ed Alcantar	7	✓	✓	✓	✓	✓						
William Colisch, PLS	34	✓	✓	✓	✓	✓	✓	✓				
Keith Colisch	12	✓	✓	✓	✓							
Tyler Sweet, PLS	43	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Scott Edwards, PLS	20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mark Byrd, PLS	40	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marshall Byrd, PLS	21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

JIM COLTON, PLS – CONTRACT/SURVEY MANAGER — OBEC – EUGENE

Education
- Diploma – Surveying and Mapping, International Correspondence School – 1983
- General Studies, Northern Arizona University – 1971-72

Special Training
- Trimble Certified GPS Training, 2003, 2005, 2007, & 2008
- RW Acquisition Specialist Training – ODOT, 2007
- OPUS-Projects Manager Training – NGS, 2011
- Traffic Control Technician – ODOT, 2013
- Traffic Control Flagger – ODOT, 2013
- Trimble Business Center – OBEC, 2015

Contract Assignment: Contract/Survey Manager
Duties:
- Communications with BPA CO and COTR
- Communication with team Project Surveyors and subcontractors
- Provide QA/QC review prior to submission of deliverables
- Provide logistical planning and coordination support to the Project Surveyors

Registration
- Professional Land Surveyor, Oregon No. 58756
- Professional Land Surveyor, Idaho No. 15464

BPA Access:
- Badged Access
- ProjectWise

Affiliations
- Professional Land Surveyors of Oregon
- Idaho Society of Professional Land Surveyors
- Oregon GPS Users Group
- National Society of Professional Surveyors (NSPS)
- Society of American Military Engineers

Total Years of Experience: 37
Combined Years of GPS Experience: 12
Static: 12
RTK: 12
RTN (Real Time Networks): 6
OPUS: 12

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Jim has field survey and project management experience with Route Surveys for transportation and utility projects. One of his BPA projects was a 30-mile water transmission line that paralleled a large electric transmission line. He had to locate the electric line sags, attachment points, and tied many PLSS and private monuments. Another project was a 12-mile route survey for Western Federal Lands Highway Division (WFLHD) in eastern Oregon. His clients have included the Oregon Department of Transportation (ODOT), Arkansas Highway Department, WFLHD, and various city and county agencies. **[36 years of experience]**

B. Topographic Surveying: Jim has extensive field survey, project surveyor, and project management experience with topographic surveys, ranging from surveys for BPA substation expansions (Bell, Hatwai, Ostrander, Maple Valley, Ross) and a new substation (Longhorn), to surveys for radio sites for Southwest Power Administration, urban and rural highways, water transmission lines, sewer lines, and residential and commercial developments. Clients include BPA, private individuals, developers, various state and local agencies, US Army Corps of Engineers (USACE), and the Southwest Power Administration. **[37 years of experience]**

C. GPS Experience: Jim brings field survey and project surveyor experience on the BPA Olympia Region and Spokane Area LiDAR Control Surveys, BPA LiDAR verification survey, BPA networks at many substations and many GPS control networks on transportation projects for ODOT and local agencies and large regional control networks for various agencies. The networks typically had statistical specifications of 95 percent confidence level (2-sigma). **[13 years of experience]**

D. Transmission Line Experience: Jim's field survey and project management experience includes many BPA projects including transmission re-build projects, LiDAR verification surveys, BPA span studies, measuring sag and attachment points on various sizes of transmission lines lay out, and relocation of power lines and a utility conflict for BPA tower removal and installation. **[25 years of experience]**

E. Resource Grade GPS Experience: Jim has provided field survey and project management experience where he collected access road data for several BPA acquisition projects, such as Albany-Eugene No. 1, Salem-Albany No. 1 & 2, utility and wetlands data with Resource Grade GPS equipment. He has also used GPS for PLSS and private survey monument searches. **[12 years of experience]**

F. Cadastral Experience: Jim's field survey, project surveyor, and project management experience includes BPA's Hatwai Substation survey, where OBEC tied PLSS corners in order to break down a section. His experience also includes several BPA rebuild projects, the BPA Celilo-Sylmar No. 1 re-conductor project, and many projects with section breakdowns and original evidence searches, including across township and range lines. Jim has re-established government corners using the BLM Manual as a guide. **[34 years of experience]**

G. Legal Description & Exhibit Preparation: Jim's project surveyor and project management experience includes reviewing deeds, title reports, and survey monuments to create base maps for acquisitions; preparation of legal descriptions and exhibit maps for acquisition of various types of easements and fee parcels; property line adjustments; and roadway legalization projects. He has provided QA/QC for many legal descriptions and exhibit maps. He has prepared documents and provided QA/QC for several BPA projects, including Albany-Eugene No. 1, Salem-Albany No. 1 and No. 2, Lane-Wendson No. 1, and Marion-Alvey No. 1. Other clients have included ODOT and many local agencies and individual clients in Arkansas, Arizona, and Oregon. **[31 years of experience]**

H. Survey Maps with Microstation: Jim's project surveyor and project management experience includes QA/QC of BPA maps of topographic surveys for substation expansion and a new substation (Sappho SS topographic survey), BPA Plan and Profile maps, BPA Records of Survey, and BPA survey base maps for transmission line rebuild projects. He has experience preparing and providing QA/QC of Records of Survey, Partition Plats, Property Line Adjustments, Subdivision Plats, ALTA/ACSM Land Title Surveys for various public and private owners. **[14 years experience]**

I. Surveying Across Tribal/Sensitive Areas: Jim's field survey, project surveyor, and project management experience includes surveying across USFS, USACE, and BLM lands for roads and maintenance of USACE boundaries around lakes. His experience includes the South Century Drive project, a 12-mile route survey and easement preparation for WFLHD in eastern Oregon across USFS lands. **[8 years of experience]**

K. Lidar Point Cloud Data: Jim is experienced using LiDAR point cloud data on a few BPA re-build projects, Albany-Eugene No. 1, Alvey-Fairview No. 1 and Salem-Albany No. 1 and No. 2 transmission lines, where OBEC was tasked with verifying foreign crossing locations and attachment points. His experience also includes the Chambers Covered Bridge Restoration project in Cottage Grove, Oregon, where OBEC used scanned data to produce the project base map and 3D model for design.
[6 years of experience]

Normal Daily Duties Include: Overall Survey Group management for four survey offices, project development and pre-marketing, planning, coordination support of project surveyors, QA/QC of all survey deliverables, and billing of survey projects.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Olympic Region LiDAR Control Survey (BPA)/ $250K			✓										✓	✓			✓	✓	✓
Ross Complex Topo Surveys (BPA)/ $48K		✓					✓	✓				✓					✓	✓	✓
Albany-Eugene No. 1 Rebuild (BPA)/ $867K			✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Salem-Albany No. 2 Rebuild (BPA)/ $562K	✓		✓	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓
Celilo-Sylmar No. 1 Re-conductor (BPA)/ $336K	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓
Reedsport Substation Record of Survey (BPA)/ $27K			✓			✓		✓				✓					✓	✓	✓
Pearl-Keeler No. 1 Record of Survey (BPA)/ $179K			✓	✓	✓	✓		✓				✓		✓	✓		✓	✓	✓
Sappho SS Topographic Survey (BPA)/ $40K		✓	✓					✓				✓		✓			✓	✓	✓
South Century Drive, OR PFH 92-1(1) (WFLHD)/ $120K	✓	✓	✓			✓		✓					✓	✓	✓	✓	✓	✓	✓
FY 14 Baseline Modernization (BPA)/ $177K			✓					✓				✓		✓			✓	✓	✓
Spokane Area LiDAR Control Survey (BPA)/ $372K			✓									✓		✓			✓	✓	✓
FY12, FY13 & FY14 RADIO Inventory Project (BPA) /$150K		✓	✓									✓					✓	✓	✓

LOGAN T. MILES, PLS – REGISTERED LAND SURVEYOR — OBEC – MEDFORD

Education
- BS – Surveying, Oregon Institute of Technology – 2001

Special Training
- Trimble Certified GPS Training, 2003, 2005, 2007, 2014
- Right-of-Way Engineering – ODOT, 2007
- Traffic Control Technician – ODOT, 2013
- Traffic Control Flagger – ODOT, 2013
- Microstation Training – Zen, 2007
- Procedures for Energized Access, Permits, and Clearance Certifications (Non-Electrical Access Permit) – BPA
- NERC-CIP Energized Access Training – BPA
- OPUS-Projects Manager Training – NGS, 2011
- OIT/BLM Training, 2014
- Trimble Business Center–OBEC, 2015

Contract Assignment: Project Surveyor
Duties:
- Communicates with project team, BPA staff, and subcontractors, and prepares Progress Reports
- Monitors progress of the project and tracks project budgets
- Research, project planning, and coordination with field and office staff and BPA Project Surveyors and Drafters
- Boundary Resolutions and Legal Descriptions
- Oversees processing and adjustment of GPS and Terrestrial data
- Oversees production of deliverables and provides QC of those items

Registrations
- Professional Land Surveyor, Oregon No. 65452
- Professional Land Surveyor, Idaho No. 15629

BPA Access:
- Logical Access (myPC, eGIS, LIS)
- Badged Access
- ProjectWise
- Non-Electrical Energized Access
- Transmission Line Corridor Access with TM Key

Affiliations
- Professional Land Surveyors of Oregon
- National Society of Professions Surveyors (NSPS)
- Past President of PLSO Rogue River Chapter
- Past President and Co-founder of the Student Chapter of PLSO
- Oregon State Board of Examiners for Engineering and Land Surveying – Board Member Land Surveyor
- Oregon State Board of Examiners for Engineering and Land Surveying – Examination Development Team Member

Total Years of Experience: 15
Combined Years of GPS Experience: 15
Static: 15
RTK: 15
RTN (Real Time Networks): 6
OPUS: 15

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Logan spent the first six years of his career working for a private consultant that worked for developers and engineers. He gained valuable experience in county road and city street projects, as well as major utility projects, such as sewer, storm drain, water canal, and flume projects. At OBEC, he has worked on numerous freeway, highway, and county road and energy projects. He has performed retracement surveys for bridge replacements and realignments, transmission lines, substations and radio sites. His survey work includes topographic data collection and construction layout of streets, roads, bridges and various utilities, including the design and preparation of legal descriptions for acquired right-of-way and easements for many clients including BPA. **[10 years of experience]**

B. Topographic Surveying: Logan has related similar topographic surveying experience for radio sites, substations, large sewer treatment plants, industrial yards, flumes, forebays, roadways, bridges, city streets for utilities, clean water intake structures. Clients include BPA, local jurisdictions, ODOT, Oregon Bridge Delivery Partners, Black & Veatch, private developers, and PacifiCorp. **[15 years of experience]**

C. GPS Experience: Logan has worked on large regional and midsized to small photo control projects, horizontal and vertical control networks utilizing GPS, and digital levels. He has experience using OPUS Projects Manager and TBC to adjust GPS and terrestrial networks and using the OPUS database for processing GPS observations. His experience includes RTK/RTN surveying for all types of projects, including construction, boundary, retracement, as-built, and topographic surveying. **[15 years of experience]**

D. Transmission Line Experience: Logan has performed boundary and topographic location of proposed transmission lines for the purpose of writing legal descriptions for easements for the new or re-located transmission lines, access roads, and radio sites. He has experience working on LiDAR verification, span studies, rebuild projects, and foreign crossing studies. His transmission line experience is primarily with BPA and PacifiCorp. **[5 years of experience]**

E. Resource Grade GPS Experience: Logan is experienced with resource grade data collection and processing for many projects, including the Level 3 fiber optic cable from Yakima, Washington to Ontario, Oregon, along portions of numerous sections across the western United States. Other resource grade applications include wetland delineations, bore holes, utility as-built surveys, access road surveys, and radio inventory surveys with Trimble equipment and with Pathfinder Office. **[15 years of experience]**

F. Cadastral Experience: Logan spent a summer interning with the Winema National Forest and performing multiple cadastral surveys, including substations, radio sites, highway/road retracements, private boundaries, land development, and subdivision of sections. **[8 years of experience]**

G. Legal Descriptions & Exhibit Preparation: Logan has worked on many types of legal descriptions and exhibit maps, including BPA A-tracts, additional width tracts, access road acquisitions, Radio Site acquisitions, Land Disposal Requests, Superseded tracts, utility and slope easements, highway/roadway strip descriptions for right-of-way and easement acquisitions, private access easements, property line adjustment descriptions, vesting deed descriptions, and land development-related descriptions. **[11 years of experience]**

H. Survey Maps with Microstation: Since joining OBEC, Microstation/InRoads has been Logan's primary CAD package. Working with Agencies like BPA and ODOT has provided many opportunities to produce Microstation deliverables for a variety of survey applications. Some of these include substation topographic and retracement maps, plan maps, hybridized maps, survey base maps for transmission lines, radio sites and access road acquisitions, exhibit maps for acquisitions, intelligent digital terrain models (DTM), shape files, roadway retracement and monumentation surveys, right-of-way roll maps, records of surveys, construction calculation maps, and as-built maps. **[7 years of experience]**

I. Surveying Across Tribal/Sensitive Areas: During an internship with the Winema National Forest, Logan spent his time surveying within the Crater Lake National Park, as well as cadastral surveys with encroaching landowners and burnt out areas from fires. Since joining OBEC and working with BPA, he has had opportunities to work on projects that included many different types of public and private land ownerships, including Tribal Lands and lease acquisitions, Federal Aviation Administration sites, Forest Service/BLM lands, Railroad rights-of-ways, water intake plants, treatment plants, energized areas, wetland areas, in-water work areas, and archaeological zones within construction sites. **[9 years of experience]**

J. GIS Attribute Data Collection: Attributed data collection has been a part of Logan's surveying experience since the beginning of his career. Experience includes Level 3 fiber optic location and attributes collection, high accuracy attributed data collection of BPA Radio inventory project, attributed data collection for BPA access road surveys, and survey grade attributed collection for surveying applications like topographic surveys, retracements, and boundary surveys. **[15 years of experience]**

K. LiDAR Point Cloud Data: Examples of Logan's experience with the review and/or extraction of LiDAR data include crossing inventories, data checks, beam path profiles/tree heights, mobile scan data for roadway projects, and plan and profile hybridizations. **[3 years of experience]**

Normal Daily Duties Include: Communication with clients, subcontractors, project managers, and field crews. Performing right-of-way and centerline resolution and retracement surveys, monumentation and boundary surveys; writing legal descriptions; construction calculations; staking; and planning and processing GPS networks.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Reedsport Substation Record of Survey (BPA) /$27K	✓			✓		✓		✓					✓	✓	✓		✓	✓	✓
Sawtell Peak and Macks Inn Radio Site Surveys (BPA)/$26K	✓	✓	✓		✓	✓		✓		✓	✓		✓	✓				✓	✓
FY12, FY13 & FY14 Radio Inventory Project (BPA) /$152K	✓	✓	✓		✓					✓			✓	✓	✓			✓	✓
Thunder Ridge Radio Site Acquisition and ROS (BPA)/$16K	✓	✓	✓		✓		✓	✓					✓	✓	✓	✓		✓	✓
Bonanza Butte & Ferry Butte Site and Acquisition Surveys (BPA)/$23K			✓		✓		✓	✓					✓	✓	✓	✓	✓		✓
Lane-Wendson No. 1 Rebuild, ARAR Docs. (BPA)/$354K	✓		✓	✓	✓	✓	✓	✓	✓		✓					✓	✓		✓
Hersey St. Sidewalks: N Main St. to Oak St. (City of Ashland)/$266K	✓	✓	✓				✓	✓					✓	✓	✓	✓		✓	✓
Freeman Road Improvements (City of Central Point)/$280K	✓	✓	✓				✓	✓					✓	✓	✓	✓		✓	✓
Sanitary Sewer Trunk Line As-built (City of Ashland) /$30K	✓	✓	✓						✓	✓			✓	✓	✓			✓	✓

ANDREW PLETT, PLS – REGISTERED LAND SURVEYOR — OBEC – VANCOUVER

Education
- BS – Geomatics, Oregon Institute of Technology – 2006

Special Training
- Trimble Certified GPS Training, 2013
- Traffic Control Technician – ODOT, 2013
- Traffic Control Flagger – ODOT, 2013
- OIT/BLM Conference, 2011, 2012, 2013
- OPUS-Projects Manager Training – NGS, 2014
- Trimble Business Center – OBEC, 2015

Contract Assignment: Project Surveyor
Duties:
- Communicates with project team, BPA staff, and subcontractors, and prepares Progress Reports
- Monitors progress of the project and tracks project budgets
- Research, project planning, and coordination with field and office staff and BPA Project Surveyors and Drafters
- Boundary Resolutions and Legal Descriptions
- Oversees processing and adjustment of GPS and Terrestrial data
- Oversees production of deliverables and provides QC of those items

Registration
- Professional Land Surveyor, Oregon No. 78538PLS
- Professional Land Surveyor, Washington No. 50707

BPA Access
- ProjectWise
- Logical Access (myPC, eGIS, LIS)
- Badged Access
- Transmission Line Corridor Access with TM Key

Affiliations
- Professional Land Surveyors of Oregon
- National Society of Professional Surveyors

Total Years of Experience: 12
Combined Years of GPS Experience: 12
Static: 12
RTK: 11
RTN (Real Time Networks): 8
OPUS: 12

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Andrew has experience working on route surveying projects, both in retracing road alignments and transmission line alignments. This includes researching the survey history along the alignment, coordinating the control survey, resolving alignment and right-of-way issues, and monumentation. **[3 years of experience]**

B. Topographic Surveying: Andrew has extensive experience in topographic mapping, both in the field and the office. Andrew's field techniques have included conventional total station and GPS surveying, GPS-equipped all-terrain vehicles, plane table, and DTM creation from LiDAR and DEM data with field verification. He has extensive experience in creation of DTMs and QA, checking for overlapping breaklines, bad data, etc. **[12 years of experience]**

C. GPS Experience: Andrew has well-rounded experience with GPS surveying, including static, fast static, OPUS, OPUS Projects, RTK, and network RTK techniques. He has nine years of office experience with data processing, QA of observations, and troubleshooting of GPS errors for field crews. He took GPS coursework at OIT. **[12 years of experience]**

D. Transmission Line Experience: Andrew has growing experience with transmission line surveying with BPA, including crossing inventories, L-line retracement, access road surveys, acquisition document preparation and review, encroachment surveys, topographic surveys, and GIS work. **[3 years of experience]**

E. Resource Grade GPS Experience: Andrew's field experience with resource-grade GPS for access road surveys includes attribute entry, troubleshooting, point, and linear features. **[2 years of experience]**

F. Cadastral Experience: Andrew has extensive experience with cadastral and boundary retracement, including: multiple college courses in boundary retracement; land survey work for boundary disputes heading to litigation; conventional boundary surveying; restoration of cadastral corners based on found and opened original bearing trees and other evidence; section breakdown; Donation Land Claim retracements; extensive experience recovering stones and bearing trees; preparation of boundary survey plats and corner restoration records; and PLSS corner restoration under the direction or in conjunction with County Surveyors. He has experience with chain of title searches from GLO Patent to the present day, researching field notes and survey records in county surveyor offices, county courthouses, and state archives. **[11 years of experience]**

G. Legal Description & Exhibit Preparation: Andrew has taken many college courses in legal descriptions and has considerable experience in writing all manner of legal descriptions, including metes and bounds, strip, PLSS, route, easement descriptions, and their associated exhibits. **[10 years of experience]**

H. Survey Maps with Microstation: Andrew has three years of experience with Microstation and InRoads, creating topographic maps and DTMs, record of surveys for retracements, exhibits, acquisition maps, and plan maps. **[3 years of experience]**

I: Surveying & Mapping Across Tribal/Sensitive Areas: Andrew has experience working on cadastral retracements adjoining and across USFS and BLM lands, including working in conjunction with the USFS in retracement of a Forest Road. **[5 years of experience]**

J: GIS Attribute Data Collection: Andrew has taken many college classes in GIS, including ArcMap, and has experience in shapefile creation from survey data, GIS data entry using deeds, aerial photos, and PLSS data, and GIS database creation and editing. **[2 years of experience]**

K. Working with LiDAR Point Cloud Data: Andrew has extensive experience with attaching point clouds to survey drawings in Microstation and Civil3D, configuring point cloud display options, extraction of surfaces from point clouds, extraction of data from point clouds, and use of PLS-CADD to view and export data. **[2 years of experience]**

Normal Daily Duties Include: Communication with clients, subcontractors, project managers, and field crews. Performing right-of-way and centerline resolution and retracement surveys, monumentation and boundary surveys; writing legal descriptions; performing construction calculations; staking; and planning and processing GPS networks.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Salem-Albany No. 1 Rebuild (BPA)/$30K	✓		✓	✓		✓	✓	✓			✓		✓	✓	✓	✓	✓		✓
John Day Powerhouse ARAR Documents (BPA)/$11K							✓						✓			✓	✓		✓
Ross Complex Topo Surveys (BPA)/$48K		✓					✓	✓					✓	✓	✓		✓	✓	✓
Fish & Wildlife "A" Tracts (BPA)/$22K								✓			✓		✓				✓		✓
Monroe-Maple Valley ROS (BPA)/$104K			✓	✓		✓		✓					✓				✓		✓
Hot Springs-Anaconda ARAR Checking (BPA)/$9K							✓						✓			✓	✓		✓
Lane-Wendson No. 1 Rebuild ARAR Documents (BPA)/$354K	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓		✓
Encroachment Survey Support (BPA)/$44K	✓	✓	✓										✓	✓	✓			✓	

ANDREW SILBERNAGEL, PLS, PE, CFEDS, WRE – REGISTERED LAND SURVEYOR — OBEC – EUGENE

Education:
- BS – Civil Engineering, Oregon State University – 2007

Special Training
- Certified Federal Surveyors Program – BLM, 2015
- OPUS-Projects Manager Training – NGS, 2014
- Trimble Business Center – OBEC, 2015
- Traffic Control Technician – ODOT, 2013
- Traffic Control Flagger – ODOT, 2013

Contract Assignment: Project Surveyor
Duties:
- Communicates with project team, BPA staff, and team members, and prepares Progress Reports
- Monitors progress of the project and tracks project budgets
- Research, project planning, and coordination with field and office staff and BPA Project Surveyors and Drafters
- Boundary resolutions and legal descriptions
- Oversees processing and adjustment of GPS and Terrestrial data
- Oversees production of deliverables and provides QC of those items

Registration:
- Professional Land Surveyor, Oregon No. 79198
- Professional Engineer, Oregon No. 79198
- Water Rights Examiner, Oregon No. 79198
- Certified Federal Surveyor No. 1655

BPA Access:
- ProjectWise
- Transmission Line Corridor Access with TM Key

Affiliations:
- Professional Land Surveyors of Oregon
- National Society of Professional Surveyors

Total Years of Experience: 9
Combined Years of GPS Experience: 9
Static: 9
RTK: 9
RTN (Real Time Networks): 6
OPUS: 9

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Andrew has surveyed numerous state highways, county roads, and city streets for bridge construction and road realignments. His experience includes planning and establishing control networks, performing monument recovery, collecting topographic data, retracing right-of-ways, preparing legal descriptions and exhibits for right-of-way acquisition, and performing construction layout. Recent projects include OR126 Torrence Road – West 11th Street and Willamette River Bridge. **[9 years of experience]**

B. Topographic Surveying: Andrew has nine years of topographic mapping experience. He started as rod man on a survey crew. As he gained experience, he worked his way up to a Registered Land Surveyor and now leads teams on survey projects. Recent BPA projects include Ostrander Substation and Maple Valley Substation. Clients have included BPA, ODOT, Murray Smith and Associates, Eugene Water and Electric Board, and various local agencies. **[9 years of experience]**

C. GPS Experience: Andrew is experienced in using OPUS, OPUS-RS, OPUS Project Manager, and TBC to process and adjust control points and networks on projects ranging from BPA LiDAR Verifications, BPA Substation topographic surveys, transportation projects, and control networks. Over the last several years, he has used the Oregon real-time network (ORGN) and the Trimble VRS-Now Network. **[9 years of experience]**

D. Transmission Line Experience: Andrew has gained experience working on several BPA rebuild projects, including Salem-Albany No. 1 and No. 2, where he surveyed for access roads, tied cadastral corners, and helped develop base maps for the purpose of preparing ARAR documents. Andrew also is experienced with the preparation of revised or new plan and profile maps (e.g. Salem-Albany No. 1), LiDAR verification surveys along BPA transmission lines, and span studies and crossing inventories (e.g. Albany-Eugene No. 1). **[6 years of experience]**

E. Resource Grade GPS Experience: Andrew has collected and processed numerous access roads for BPA Rebuild projects and Wetland Delineation projects, including Salem-Albany No.1 & No. 2, Lane-Wendson No. 1, and Celilo-Slymar No. 1, using resource grade GPS. **[9 years of experience]**

F. Cadastral Experience: Andrew has searched for and recovered many governments corners while working on a variety of projects. Some of his BPA projects include Albany-Eugene No. 1, Salem-Albany No. 2, and Celilo-Sylmar No.1. Other projects Andrew has worked on are highway/road retracement surveys and land development projects. In the winter of 2014-2015, he enrolled in the Certified Federal Surveyor (CFedS) program and in February 2015, he passed the exam and became a CFedS. **[9 years of experience]**

G. Legal Description & Exhibit Preparation: Andrew has written and reviewed numerous legal descriptions for access roads on BPA rebuild projects, including Celilo-Sylmar No. 1, Salem-Albany No.2, Lane-Wendson No. 1, and Marion-Alvey No. 1, and local government agencies for right-of-way acquisition, utility, and construction easements. **[4 years of experience]**

H. Survey Maps with Microstation: Since coming to OBEC, Andrew has primarily used Microstation/InRoads as his CAD platform. Since 2010, Andrew has used BPA Space with Microstation to produce a wide range of survey deliverables, including BPA topographic surveys, survey base maps, plan and profile maps, and hybridized maps. He has created and/or overseen the creation of topographic (topo) base maps (e.g. Ostrander SS, Hatwai SS, and Maple Valley SS), and plan, profile, and exhibit maps (e.g. Salem-Albany No. 1 and No. 2, Marion-Alvey, Celilo-Sylmar No. 1, and Lane-Wendson No. 1). **[9 years of experience]**

I. Surveying across Tribal/Sensitive Areas: Andrew has performed a topographic survey at BPA's Hatwai Substation on the Nez Perce reservation. The CFedS training Andrew completed discussed some of the concerns regarding tribal sensitive areas. On ODOT and local agency projects, he has worked on BLM, USFS, and USACE lands and has encountered archeological sites, hazmat sites, railroads, and wetland sites. **[9 years of experience]**

J. GIS attribute data collection and deliverables including ArcMap use: Attributed data collection has been part of Andrew's survey career from the beginning. He has performed numerous topographic surveys in which the data could have been extracted and placed into a GIS database. Over the last several years, he has been collecting data for BPA access roads then using Bentley Maps and ArcMap to export the data to a shape file which then can be imported into BPA's GIS database. **[9 years of experience]**

K. Lidar & Cloud Point Data: Andrew has used LiDAR point cloud data on several rebuild projects, including Salem-Albany No. 1 and No. 2, and Albany-Eugene. For these projects, OBEC was provided the LiDAR data from BPA and had to go in and extract vertical clearances and foreign crossing information. **[5 years of experience]**

Normal Daily Duties Include: Communication with clients, subcontractors, project managers, and field crews. Performing right-of-way and centerline resolution and retracement surveys, monumentation and boundary surveys; writing legal descriptions; performing construction calculations; staking; and planning and processing GPS networks.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
FY15 Baseline Modernization Surveys (BPA)/$77K			✓	✓				✓					✓	✓			✓	✓	✓
Salem-Albany No.2 Rebuild (BPA)/$562K	✓		✓	✓	✓	✓	✓	✓			✓		✓	✓		✓	✓	✓	✓
Salem Albany No. 1 Plan and Profile Maps (BPA)/ $30K								✓					✓				✓	✓	✓
Celilo-Sylmar No. 1 Re-Conductor Project (BPA)/$336K	✓		✓	✓	✓	✓	✓	✓			✓		✓		✓	✓	✓	✓	✓
Ostrander Substation – Storm Drainage and Baseline Mod. (BPA)/$33K		✓	✓	✓				✓					✓	✓			✓	✓	✓

JASON ENDICOTT – SURVEY PARTY CHIEF — OBEC – EUGENE

Education
- Associate of Applied Science – ITT Technical Institute, Phoenix, Arizona – 1996

Special Training
- Trimble Certified GPS Training, 2006, 2007
- NERC-CIP Energized Access Training – BPA
- Trimble Business Center – OBEC, 2015

BPA Access:
- Non-Electrical Energized Access
- Transmission Line Corridor Access with TM Key

Contract Assignment: Survey Party Chief
Duties:
- Communicates with Survey Manager, Project Surveyors, clients, and subcontractors
- Conducts project research and planning
- Completes field work, data collections, field notes, and pictures
- Provides data processing of field data
- Assists with the preparation of project deliverables

Total Years of Experience: 19
Combined Years of GPS Experience: 13
Static: 13
RTK: 13
RTN (Real Time Networks: 6
OPUS: 13

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Jason has spent his entire career in route surveying including laying out power line corridors, logging roads and timber lines, city and county road construction, railroad lines, gas and water lines, canal staking, and bridges. Jason has worked on numerous roadway and bridge projects for ODOT and local agencies that required route surveying techniques. He also has six years of experience working with BPA staff on many power line corridor, access road, substation, and radio site projects. **[19 years of experience]**

B. Topographic Surveying: Jason has extensive experience performing topographic surveying, including substations, radio sites, roadways, bridges, flumes, forebays, river channels, industrial yards, and railroad crossings. Clients include BPA, ODOT, PacifiCorp, and city and county agencies. **[16 years of experience]**

C. GPS Experience: Jason brings experience using GPS to establish horizontal and vertical control networks, collect data, establish RTK/RTN positions and checks, and collect static observations for OPUS processing. Jason is experienced at processing and analyzing GPS data with Trimble Business Center, OPUS, and OPUS-RS. **[12 years of experience]**

D. Transmission Line Experience: Jason has experience in relocation surveying for power poles, mapping associated areas, determining encroachments, marking right-of-way, LiDAR verifications, access road surveys, and structure layout. **[19 years of experience]**

E. Resource Grade GPS Experience: Jason brings extensive experience using Trimble Pathfinder & Geo XT for data collection of new and existing access road locations, including condition of routes, utility, and wetlands data. **[10 years of experience]**

F. Cadastral Experience: Jason's experience includes breaking down sections and surveying sections of wilderness boundaries and National Forest Service lines for BPA transmission rebuild projects, highway retracements, bridge projects, and boundary surveys. **[19 years of experience]**

H. Survey Maps with Microstation: Jason's experience includes processing raw field data with InRoads and producing topographic maps for BPA substation expansions and radio sites, as well as tasks for transportation projects such as retracement surveys, as-built surveys, and construction verification surveys. **[8 years of experience]**

I. Surveying & Mapping Across Tribal/Sensitive Areas: Jason has worked on projects that included many types of public and private land ownerships, including tribal lands and lease acquisitions, Federal Aviation Administration sites, Forest Service/BLM lands, railroad right-of-ways, water intake plants, treatment plants, energized areas, wetland areas, in-water work areas, and archaeological zones within construction sites. **[6 years of experience]**

J. GIS Attribute Data Collection: Jason has experience using Trimble Pathfinder and Geo XT data collection methods for BPA access roads, gates, utilities, cut lines, fences, and road conditions. Jason also has experience with high-accuracy attribute data collection on the BPA Radio Inventory project, topographic surveys, as-built survey, retracement, and boundary surveys. **[10 years of experience]**

Normal Daily Duties Include: Researching, planning, and preparing for the field. Coordinating with the Project Surveyor, clients, and other staff members. Collecting accurate field data and preparing field notes. Downloading and processing the field data, checking the field data, and preparing deliverables.																			
Recent Relevant Project Experience / Size ($)	**Scope**											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**								
Salem-Albany No. 2 Rebuild (BPA)/$562K	✓		✓	✓	✓	✓	✓	✓			✓			✓	✓	✓	✓	✓	✓
FY15 Baseline Modernization Surveys (BPA)/$77K			✓	✓				✓						✓	✓		✓	✓	✓
Monroe-Maple Valley ROW Recovery (BPA)/$104K	✓	✓	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓
Encroachment Survey Support (BPA)/$44K	✓	✓	✓						✓					✓	✓	✓	✓	✓	✓
FY12, FY13, FY14 RADIO Inventory (BPA) /$152K	✓	✓	✓		✓					✓				✓	✓		✓	✓	✓
Paul Substation Topographic Survey (BPA)/$21K	✓	✓	✓	✓										✓	✓		✓	✓	✓
Spokane Region LiDAR Control Survey (BPA)/$372K			✓						✓					✓	✓		✓	✓	✓
Olympic Region LiDAR Control Survey (BPA)/$250K			✓											✓	✓		✓	✓	✓

RUBEN L. MENDOZA – SURVEY PARTY CHIEF — OBEC – EUGENE

Education
- Diploma, Sanger High School, Sanger, California

Special Training
- Trimble Certified GPS Training, 2013 & 2014
- Procedures for Energized Access, Permits, and Clearance Certifications (Non-Electrical Access Permit)
- NERC-CIP Energized Access Training
- Trimble Business Center – OBEC, 2015

BPA Access:
- Non-Electrical Energized Access
- Transmission Line Corridor Access with TM Key

Contract Assignment: **Survey Party Chief**

Duties:
- Communicates with Survey Manager, Project Surveyors, clients, and subcontractors
- Conducts project research and planning
- Completes field work, data collections, field notes, and pictures
- Provides data processing of field data
- Assists with the preparation of project deliverables

Total Years of Experience: 9

Combined Years of GPS Experience: 9
Static: 9
RTK: 9
RTN (Real Time Networks): 6
OPUS: 8

Level of Experience / Years
A. Route Surveying: Ruben is experienced in various types of route surveying, including interstate highways, city streets, railroad lines, and transmission lines. His survey work includes location data gathering and construction layout. He is experienced in mapping pole and tower locations, wire heights, utility attachments, and guy anchors. **[9 years of experience]**
B. Topographic Surveying: Ruben is experienced in many types of topographic surveys, including BPA substation expansions (Bell, Sappho, and Ostrander), BPA substation security upgrades (Chief Joseph, Custer, and Maple Valley), airports, bridge sites, river channels, water tanks, water treatment plants, and other utility sites. Terrain and topographic difficulty levels range from very low to very high. **[9 years of experience]**
C. GPS Experience: Ruben is experienced in horizontal and vertical control networks and large static networks, such as BPA Olympia Region and Spokane Area LiDAR control surveys. He has completed RTK/VRS network, Static, and Fast Static GPS networks for transportation projects for ODOT and local government agencies. **[9 years of experience]**
D. Transmission Line Experience: Ruben is experienced in BPA transmission line rebuild projects, including BPA span studies that measure attachment points and sags on various sizes of transmission lines. He has experience in conventional data gathering of points determining the centerline coordinates of various transmission tower locations. Ruben is experienced in the layout of new pole and guy anchor locations (substation and corridor) on construction survey projects. **[9 years of experience]**
E. Resource Grade GPS Experience: Ruben is experienced with Trimble Pathfinder & Geo XT for data collection of new and existing access road locations, including condition of routes, utility, and wetlands data. His experience includes BPA access road acquisition projects Albany-Eugene No. 1 and Salem-Albany No. 2. **[9 years of experience]**
F. Cadastral Experience: Ruben is experienced in locating, re-setting, and breaking down sections for BPA, ODOT, and local government agencies. BPA transmission line rebuild projects, including Lane-Wendson No. 1, Marion-Alvey No. 1, Salem-Albany No. 1, and Salem-Albany No. 2, required extensive searches for multiple PLSS monuments for section breakdowns. **[9 years of experience]**
H. Survey Maps with Microstation: Ruben's experience includes processing raw field data with InRoads and producing topographic maps for BPA substation expansions and radio sites, as well as other transportation projects for ODOT and local government agencies, including retracement surveys, as-built surveys, and construction verification surveys. **[8 years of experience]**
I. Surveying & Mapping Across Tribal/Sensitive Areas: Ruben has worked on projects that included many types of public and private land ownerships, including tribal lands and lease acquisitions, Federal Aviation Administration sites, Forest Service/BLM lands, railroad right-of-ways, water intake plants, treatment plants, energized areas, wetland areas, in-water work areas, and archaeological zones within construction sites. **[6 years of experience]**
J. GIS Attribute Data Collection: Ruben worked on BPA access road acquisition projects, including Albany-Eugene No. 1, Salem-Albany No. 1, and Salem-Albany No. 2, completing data collection of new and existing access road locations, including route condition. He also collected data for BPA FY14 Radio Inventory Project, where he collected data on existing radio towers and antennas. Other data collection experience includes wetland and utility projects for ODOT and local government agencies. **[9 years of experience]**

K. Lidar Point Cloud Data: Ruben's experience includes using LiDAR point cloud data for BPA rebuild projects (e.g. Albany-Eugene No.1, Salem-Albany No. 1, and Salem-Albany No. 2). His task was to compare conventionally surveyed foreign crossing locations and attachment points with the point cloud data. **[5 years of experience]**

Normal Daily Duties Include: Researching, planning, and preparing for the field. Coordinating with the Project Surveyor, clients, and other staff members. Collecting accurate field data and preparing field notes. Downloading and processing the field data, checking the field data, and preparing deliverables.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Salem-Albany No. 2 Rebuild (BPA)/$562K	✓		✓	✓	✓	✓	✓	✓			✓			✓	✓			✓	✓
FY15 Baseline Modernization Surveys (BPA)/$77K			✓	✓				✓						✓	✓			✓	✓
FY14 Baseline Modernization Surveys (BPA)/$177K			✓	✓				✓						✓	✓			✓	✓
Sappho Substation Topo Survey (BPA)/$40K		✓	✓	✓		✓		✓						✓	✓			✓	✓
Ostrander Substation – Storm Drainage & Baseline Mod. (BPA)/$33K	✓	✓	✓					✓						✓	✓			✓	✓
Sawtell Peak and Macks Inn Radio Site Surveys (BPA)/$26K	✓	✓	✓		✓	✓		✓		✓	✓			✓	✓			✓	✓
Albany-Eugene No. 1 Rebuild (BPA)/$867K	✓		✓	✓	✓	✓	✓	✓			✓			✓	✓			✓	✓
A Street: 5th Street-Mill Street; Main Street-Be Street (City of Springfield)/$132K	✓	✓	✓			✓		✓						✓	✓			✓	✓

BRYAN J. DOSS, SURVEY PARTY CHIEF / CARTOGRAPHIC TECHNICIAN — OBEC – LAKE OSWEGO

Education
- BS – Geography, University of Oregon – 2003
- BS – Environmental Studies, University of Oregon – 2003

Special Training
- GPS Workshop – Oregon State University, 2006
- Trimble Business Center – OBEC, 2015
- Traffic Control Technician – ODOT, 2013
- Traffic Control Flagger – ODOT, 2013
- Trimble Certified GPS Training, 2007
- GPS/RTK Trimble Certified Training, 2007

BPA Access
- Transmission Line Corridor Access with TM Key

Contract Assignment: Survey Party Chief

Duties:
- Communicates with Survey Manager, Project Surveyors, clients, and subcontractors
- Conducts project research and planning
- Completes field work, data collections, field notes, and pictures
- Provides data processing of field data
- Assists with the preparation of project deliverables

Total Years of Experience: 11
Combined Years of GPS Experience: 11
Static: 11
RTK: 11
RTN (Real Time Networks): 6
OPUS: 11

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Bryan has experience in various types of route surveying from interstate highways, city streets, and country roads, to railroad lines and transmission lines. Survey work includes location data gathering and construction layout. Bryan is experienced in mapping pole and tower locations, wire heights, utility attachments, and guy anchors. **[11 years of experience]**

B. Topographic Surveying: Bryan has experience in many types of topographic surveys including bridge sites, river channels, water tanks, rock quarries, airports, treatment plants, substations and other utility sites. Terrain and topographic difficulty levels range from very low to very high. **[11 years of experience]**

C. GPS Experience: Bryan has experience in a variety of GPS surveys ranging from complicated and very large networks to smaller, simpler networks. He is experienced in horizontal and vertical control networks, RTK networks, static networks, photogrammetry networks, and digital leveling. These networks have been in a variety of locations, ranging from difficult terrain and high elevations to simple terrain and lower elevations. **[11 years of experience]**

D. Transmission Line Experience: Bryan's experience with BPA Corridors comes from multiple LiDAR verification projects from 2008 to 2014 with Primary and Secondary GPS Control networks as well as Total Station data gathering of horizontal check points to determine the centerline coordinates of various transmission tower locations. He is experienced in the layout of pole locations on construction survey projects. His experience includes mapping pole locations, wire heights, and utility attachments. **[7 years of experience]**

E. Resource Grade GPS Experience: Bryan has experience with GeoXT for the tying of BPA access roads, section corner locations, and approximate locations of simple alignments and boundaries. He used a personal GPS device on BPA Olympia Region LiDAR project to navigate to many secondary control points in difficult-to-access locations. **[9 years of experience]**

F. Cadastral Experience: Bryan has experience tying section corners with GPS and/or Total Station equipment. OBEC ties into at least one government corner on every project. He has experience blazing section lines and performing boundary surveys in difficult terrain on Forest Service and BLM land. **[11 years of experience]**

H. Survey Maps with Microstation: Bryan has processed raw field data with InRoads and produced topographic maps for BPA substation expansions. He has performed retracement surveys, as-built surveys, and construction verification surveys. **[9 years of experience]**

I. Surveying & Mapping Across Tribal/Sensitive Areas: Bryan has worked on projects that included many types of public and private land ownerships, including tribal lands and lease acquisitions, Forest Service/BLM lands, railroad right-of-ways, water intake plants, treatment plants, energized areas, wetland areas, in-water work areas, and archaeological zones within construction sites. **[9 years of experience]**

Normal Daily Duties Include: Researching, planning, and preparing for the field. Coordinating with the Project Surveyor, clients, and other staff members. Collecting accurate field data and preparing field notes. Downloading and processing the field data, checking the field data, and preparing deliverables.																			
Recent Relevant Project Experience / Size ($)	**Scope**											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**								
FY14 Photo ID Control Survey (BPA)/$63K		✓	✓											✓	✓		✓	✓	✓
Salem-Albany No. 1 Rebuild (BPA)/$726K	✓		✓	✓	✓			✓						✓	✓		✓	✓	✓
Ross Substation MHQ - East Sally Port Topo (BPA)/$36K	✓	✓	✓			✓		✓						✓	✓		✓	✓	✓
Pearl-Keeler No.1 ROS (BPA)/$179K			✓	✓	✓	✓		✓						✓	✓		✓	✓	✓
FY13 Fall LiDAR Survey (BPA)/$150K	✓		✓	✓										✓	✓		✓	✓	✓
Tucannon Substation Topo (BPA)/$20K	✓	✓	✓	✓		✓		✓						✓	✓		✓	✓	✓
FY12 Spring & Fall LiDAR Survey (BPA)/$150K	✓		✓	✓										✓	✓		✓	✓	✓
Bell Substation Topo (BPA)/$25K	✓	✓	✓	✓		✓		✓						✓	✓		✓	✓	✓

ERIK J. BLAKE, SURVEY TECHNICIAN — OBEC – MEDFORD

Special Training
- Microstation V8 Essentials, 2007 & 2008
- Microstation V8i 2014
- Trimble Business Center – OBEC, 2015

BPA Access
- Transmission Line Corridor Access with TM Key

Affiliations
- Professional Land Surveyors of Oregon

Total Years of Experience: 10

Combined Years of GPS Experience: 10
Static: 10
RTK: 10
RTN (Real Time Networks): 6

Contract Assignment: Survey Technician
Duties:
- Communication with Project Surveyors and Survey Party Chiefs
- Field work
- Data processing
- Assembling survey deliverables

Level of Experience / Years

A. Route Surveying: Erik has performed transportation route surveying including interstate, city streets, and county roads, water lines, gas lines, transmission lines, canals, mines, and railroad lines. His survey work includes location data gathering and construction layout by station and offset, including curves, spirals, and railroad tapers. **[10 years of experience]**

B. Topographic Surveying: Erik has performed related topographic surveying for industrial yards, docks, piers, bridges, and river cross sections. Clients include Jackson County, Josephine County, Douglas County, Curry County, ESI, and ODOT. **[10 years of experience]**

C. GPS Experience: Erik has performed large regional-, county-, and city-sized horizontal and vertical control networks utilizing GPS and digital levels. **[10 years of experience]**

D. Transmission Line Support Surveys: Erik has performed transmission line surveys such as relocations, upgrades and foreign crossings, route alignment, profiling, location of towers, contouring and mapping of new access roads and checking clearance of transmission lines requiring extensive horizontal and elevation work involving existing structures, conductors, and attachment points. **[6 years of experience]**

E. GPS Data Collection: Erik has used various methods to collect GPS data (with an emphasis on high order control for new transmission lines or large area control for Photogrammetric or LiDAR project), including Static, Rapid Static, RTN, RTK, OPUS, Trimble Business Center and Trimble Access. **[10 years of experience]**

H. Survey Maps with Microstation: Erik's experience includes processing raw field data with InRoads and producing topographic maps for BPA substation expansions and radio sites. Other work includes retracement surveys, as-built surveys, and construction verification surveys on transportation projects. **[8 years of experience]**

I. Surveying & Mapping Across Tribal/Sensitive Areas: Erik has worked on projects that included many different types of public and private land ownerships, including tribal lands and lease acquisitions, Federal Aviation Administration sites, Forest Service/BLM lands, railroad right-of-ways, water intake plants, treatment plants, energized areas, wetland areas, in-water work areas, and archaeological zones within construction sites. **[6 years of experience]**

Normal Daily Duties Include: Coordinating with the Project Surveyor and other staff and clients. Planning for and preparing for the field. Collecting accurate data in the field. Downloading and processing field data and assisting with the preparation of deliverables.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	Construction Staking	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Sappho Substation Topo Survey (BPA)/$40K		✓	✓	✓		✓		✓						✓	✓	✓		✓	✓
Reedsport Substation Record of Survey (BPA)/$27K	✓			✓		✓		✓							✓	✓		✓	✓
Monroe-Maple Valley ROS (BPA)/$104K			✓	✓		✓		✓						✓	✓	✓		✓	✓
FY15 Baseline Modernization Surveys (BPA)/$77K			✓	✓				✓						✓	✓			✓	✓
Salem-Albany No. 1 Rebuild (BPA)/$726K	✓		✓	✓	✓									✓	✓	✓	✓	✓	✓
Newberg Dundee Bypass (ODOT Region 2)/$400K		✓	✓		✓										✓			✓	✓
Deer Creek (Lakeshore Drive) (Josephine County) /$386K	✓	✓	✓		✓									✓	✓	✓	✓	✓	✓
Freeman Road Improvements (City of Central Point) /$281K	✓	✓	✓		✓									✓	✓	✓	✓	✓	✓
Hersey Street Sidewalk: N Main Street to Oak Street (City of Ashland)/$267K	✓	✓	✓		✓									✓	✓	✓	✓	✓	✓

YUKA GARZENELLI – SENIOR CAD TECHNICIAN — OBEC – EUGENE

Education
- BS – Business Administration, Caldwell College, NJ – 1994
- AAS – Drafting, Lane Community College – 2004

Special Training
- 3D CAD Microstation/3D Drafting

Contract Assignment: Drafter/CAD Operator II **Total Years of Experience: 11**

Duties:
- Communication with Project Surveyors
- Provides knowledge of required standards for successful completion of project
- Produces a wide range of CAD deliverables in accordance with BPA standards

LEVEL OF EXPERIENCE / YEARS

H. Survey Maps with Microstation: Yuka created plan/profile maps and hybridized numerous old maps for BPA. She has created exhibit maps for right-of-way acquisitions and topographic base maps. She also has created plan sheets for bridge, heavy civil, and roadway projects for ODOT and local government agencies. **[11 years of experience]**

Normal Daily Duties Include: Complete planning and execution of mapping of various survey projects, including topographic maps, centerline resolution surveys, control network, right-of-way base maps, right-of-way monumentation surveys, exhibit maps, and BPA plan and profile maps. These duties also include being familiar with agency standards that apply to mapping to meet client needs.

Recent Relevant Project Experience / Size ($)	Scope											Survey Graphics	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	CAD Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Salem-Albany No. 2 Rebuild (BPA)/$562K								✓				✓					✓		✓
Salem-Albany No. 1 Plan and Profile Maps (BPA)/$30K								✓				✓					✓		✓
Mylar Scanning and Hybridization (BPA)/$104K								✓				✓					✓		✓
Tooze Road: 110th-Grahams Ferry (City of Wilsonville)/$826K								✓				✓					✓		✓
Roy Rodgers Road Improvements (Washington County)/$250K								✓				✓					✓		✓
Commercial Street at Union Street Improvements (City of Salem)/$200K								✓				✓					✓		✓

SERBAN DINCA – SENIOR CAD TECHNICIAN — OBEC – LAKE OSWEGO

Education
- AA – CADD, ITT Technical Institute – 2000

Special Training
- Microstation: V8i: SS3
- Microstation 3D

Contract Assignment: Drafter/CAD Operator II — **Total Years of Experience: 15**

Duties:
- Communication with Project Surveyors
- Provides detailed graphics planning from start of project through completion and archiving
- Provides knowledge of BPA standards for successful completion of project deliverables

LEVEL OF EXPERIENCE / YEARS

H. Survey Maps with Microstation: Serban's specialized experience includes using Microstation CAD software for survey projects. He regularly produces a broad range of comprehensive plans, maps, overlays, and surveying and engineering documents. **[15 years of experience]**

Normal Daily Duties Include: Complete planning and execution of mapping of various survey projects, including topographic maps, centerline resolution surveys, control network, right-of-way base maps, right-of-way monumentation surveys, and exhibit maps. These duties also include being familiar with agency standards that apply to mapping to meet client needs.

Recent Relevant Project Experience / Size ($)	Scope											Survey Graphics	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	CAD Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Brookwood Parkway NW Meek – NE Shute (Washington County)/$1.5M								✓				✓					✓		✓
East Barlow Trail Road MP 6.0 Rest Improvement (Clackamas County)/$246K								✓				✓					✓		✓
Lakeshore Dr. Lake Selmac Spillway Bridge (Josephine County)/$488K								✓				✓					✓		✓
Sunrise Corridor JTA (ODOT)/$14.7M								✓				✓					✓		✓
Empire Blvd: Newmark Ave – Wisconsin Ave (Coos Bay)/$772K								✓				✓					✓		✓
North Floras Creek – County Road No. 118 (Curry County)/$344K								✓				✓					✓		✓

STEVE WOLFER – SENIOR CAD TECHNICIAN — OBEC – EUGENE

Education
- BS – Geography, University of Oregon – 1991

Special Training
- Microstation: V8i: SS3
- Microstation 3D
- InRoads V8 Essentials

Contract Assignment: Drafter/CAD Operator II **Total Years of Experience: 18**

Duties:
- Communication with Project Surveyors
- Provides detailed graphics planning from start of project through completion and archiving
- Provides knowledge of BPA standards for successful completion of project deliverables

LEVEL OF EXPERIENCE / YEARS

H. Survey Maps with Microstation: Steve has more than 18 years of experience in using CAD software for survey projects. He uses Microstation to produce surveying and engineering deliverables for a variety of projects that include CAD-related work for plan sets, drainage maps, topographic maps, legal descriptions, exhibits, retracement surveys, and roll maps. His responsibilities include producing project deliverables, 3D modeling, and CAD technical support. [**18 years of experience**]

Normal Daily Duties Include: Complete planning and execution of mapping of various survey projects, including topographic maps, centerline resolution surveys, control network, right-of-way base maps, right-of-way monumentation surveys, and exhibit maps. These duties also include being familiar with BPA standards that apply to mapping to meet client needs.

Recent Relevant Project Experience / Size ($)	Scope											Survey Graphics	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	CAD Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Lee Street Grade: Umatilla River Bridge Replacement (ODOT)/$1.1M								✓				✓					✓		✓
Wyss Road: Trask Slough Bridge (Tillamook County)/$408K								✓				✓					✓		✓
Oregon 62 Corridor Solutions Unit 2 (ODOT)/$3.5M								✓				✓					✓		✓
Tooze Road: 110th-Grahams Ferry (City of Wilsonville)/$826K								✓				✓					✓		✓
Roy Rodgers Road Improvements (Washington County)/$250K								✓				✓					✓		✓
EWEB Riverfront Project (EWEB)/$79K								✓				✓					✓		✓

STEVEN R. SPRAGUE, PLS – REGISTERED LAND SURVEYOR — RUEN-YEAGER – SANDPOINT

Education
- Central Oregon Community College – 1984
- Oregon Institute of Technology – 1983

Special Training
- Trimble RTK/Static GPS Seminar, 2002
- Trimble GPS Seminar, 2003
- Trimble Advanced GPS Training, 2004
- Microstation Training
- OPUS-Projects Manager Training – NGS, 2011

Contract Assignment: Project Surveyor

Duties:
- GPS planning, processing and adjustments; communication with team Project Manager and Crews
- Record of surveys, legal descriptions, and mapping determinations
- Deliverables preparation for submission to BPA
- Field work and data collection, and data processing for projects

Registrations
- Professional Land Surveyor, Idaho No. 13554

Former BPA Access:
- Badged Access

Affiliations
- Idaho Society of Professional Land Surveyors
- Land Surveyors Association of Washington (LSAW)

Total Years of Experience: 35
Combined Years of GPS Experience: 15
RTK: 15
Cell Phone RTK: 6
Coop. CORS/GPS Base: 15
RTN Networks: 6

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Steve has performed as lead surveyor on large-scale road, bridge, grading, and marine surveys, as well as multiple BPA Transmission Line projects. His survey work includes topographic data collection and construction layout of streets, roads, bridges, and various utilities, including right-of-way and easements. **[35 years of experience]**

B. Topographic Surveying: Steve has performed as lead surveyor for topographic surveys, including substations, roadways, bridges, and municipal infrastructure. His clients include BPA, local municipalities, Idaho DOT, Design Build Transportation, and private developers. **[6 years of experience]**

C. GPS Experience: Steve has performed on large control projects utilizing, preplanning and adjustments to major GPS static control networks, incorporating OPUS-projects manager adjustments, OPUS database use and TBC adjustments. Steve has performed RTK/RTN surveying for all types of projects including construction, boundary, as-built, and topographic surveying. **[15 years of experience]**

D. Transmission Line Experience: Steve has performed as surveyor on BPA transmission line projects since 2009 including boundary and topographic location of proposed transmission lines. He provided data for the development of transmission line access road and easement legal descriptions. **[6 years of experience]**

E. Resource Grade GPS Experience: Steve has used resource grade GPS equipment including data collection for access roads, cadastral corner search, and mapping waypoints for "To Reaches" for project control points. **[15 years of experience]**

F. Cadastral Experience: Steve has been involved with numerous cadastral projects in Washington, Idaho, and Montana for both BPA and the private sector. Field duties include PLSS corner and accessories search, re-establishing RP's and monuments, and preparing and filing corner records. **[15 years of experience]**

G. Legal Descriptions & Exhibit Preparation: Steve has worked on multiple BPA projects involving acquisition. Tasks include reviewing/certifying title for LAR, LDR, and ARAR acquisition documents, preparing and marking up supporting documentation, and QA/QC of acquisition documents and exhibits prepared by others. **[4 years of experience]**

I. Surveying Across Tribal/Sensitive Areas: Steve has been involved with numerous BPA projects in Eastern Washington and Western Montana that have dealt with some of these sensitive areas. **[6 years of experience]**

K. LiDAR Point Cloud Data: Steve has worked on multiple projects involving LiDAR data collection. Duties included evaluating the classified LiDAR data against the RTK/Conventional survey data for accuracy. Typical verification locations included substation dead end attachment points, tower centroids, and various hard surfaces throughout the transmission line right-of-way. **[6 years of experience]**

Normal Daily Duties Include: GPS planning, processing, and adjustments; communication with team Project Manager and crews; right-of-way and centerline resolution and retracement surveys; writing legal descriptions; construction calculations and staking. Field work and data collection for projects.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Covington-Bettas Road #1 Record of Survey (BPA)/ $39K	✓			✓		✓		✓				✓	✓	✓	✓		✓	✓	✓
Hot Springs-Rattlesnake No. 1 (BPA)/$135K	✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓				✓	✓
FY15 Surveying & Mapping Work (BPA)/$71K	✓	✓	✓		✓					✓		✓	✓	✓	✓			✓	✓

STEVEN J. BINNALL, PLS – REGISTERED LAND SURVEYOR — RUEN-YEAGER – SANDPOINT

Education
- Associates Degree in Land Surveying: Flathead Valley Community College – 2006

Special Training
- OPUS-Projects Manager Training – NGS
- Hazwopper: 40 hours, 2013; 8-hour Refresher, 2014

Contract Assignment: Project Surveyor
Duties:
- GPS planning, processing and adjustments; communication with team Project Manager and Crews
- Record of surveys, legal descriptions, and mapping determinations
- Deliverables preparation for submission to BPA
- Field work and data collection, and data processing for projects

Registrations
- Professional Land Surveyor, Idaho No. 14214

Former BPA Access:
- Badged Access
- Non-Electrical Energized Access

Total Years of BPA Experience: 18
Total Years of Surveying Experience: 22

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Steve brings extensive experience in route surveying. He began as a survey technician in 1994 and he worked his way up to Professional Land Surveyor. Steve began working on BPA contracts in 1998. **[15 years of experience]**

B. Topographic Surveying: Steve has performed topographic surveys, including substations, roadways, bridges, mines, and municipal infrastructure. His clients include BPA, local municipalities, and private developers. **[15 years of experience]**

C. GPS Experience: Steve has worked on large control projects utilizing, preplanning and adjustments to major GPS static control networks, incorporating OPUS Projects Manager adjustments, OPUS database use and TBC adjustments. He has performed RTK/RTN surveying for all types of projects including transmission line, construction, boundary, as-built and topographic surveying. **[15 years of experience]**

D. Transmission Line Experience: Steve has performed as surveyor on BPA transmission line projects since 2009, including boundary and topographic location of proposed transmission lines. The data provided for the development of transmission line access road and easement legal descriptions. **[15 years of experience]**

E. Resource Grade GPS Experience: Steve used resource grade GPS equipment, including data collection for access roads, cadastral corner search, and mapping waypoints for "To Reaches" for project control points. **[3 years of experience]**

F. Cadastral Experience: Steve has been performing cadastral surveys over the last 15 years on numerous survey projects including boundary retracement, land survey work, conventional boundary surveying, and restoration of corners. **[15 years of experience]**

G. Legal Descriptions & Exhibit Preparation: Steve has worked on many BPA acquisition projects. His tasks have included reviewing/certifying title for LAR, LDR, and ARAR acquisition documents, preparing and marking up supporting documentation, and QA/QC of acquisition documents and exhibits prepared by others. **[3 years of experience]**

H. Survey Maps with Microstation: Steve has experience with Microstation/InRoads, creating topographic maps and DTMs, record of surveys for retracements, exhibits, acquisition maps, and plan maps. **[5 years of experience]**

I. Surveying Across Tribal/Sensitive Areas: Steve has extensive experience with working on culturally and environmentally sensitive areas and he has experience with the process and protocol of working on these sites. **[18 years of experience]**

J. GIS Attribute Data Collection: Steve has experience in shapefile creation from survey data, GIS data entry using deeds, aerial photos, and PLSS data, as well as GIS database creation and editing.**[2 years of experience]**

K. LiDAR Point Cloud Data: Steve has worked on multiple projects with LiDAR data collection. His experience includes evaluating the classified LiDAR data against the RTK/Conventional survey data for accuracy. Verification locations included substation dead end attachment points, tower centroids, and various hard surfaces throughout the transmission line right-of-way. **[2 years of experience]**

Normal Daily Duties Include: GPS planning, processing, and adjustments; communication with team Project Manager and crews; right-of-way and centerline resolution and retracement surveys; writing legal descriptions; construction calculations and staking. Field work and data collection for projects.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Kalispell-Kerr No. 1 (BPA)/$172K	✓	✓	✓		✓		✓	✓					✓	✓	✓		✓	✓	✓
Palisades-Swan Valley (BPA)/$16K	✓		✓	✓	✓			✓				✓	✓	✓				✓	✓

Don D. Crawford – Survey Party Chief

Ruen-Yeager – Sandpoint

Education
- Lewis & Clark State College, Lewiston, ID 1977-1979
- Surveying - Flathead Community College, Kalispell, MT 1981
- Mathematics of Surveying, North Idaho College, 1985
- Intro to AutoCAD, University of Idaho, 1991

Special Training
- OPUS-Projects Manager Training – NGS, 2014
- Institutional Controls Program I.C.P. Certified
- Trimble TBC Training, 2013
- AutoCAD in Surveying Training, 2013
- Hazwopper: 40 hours, 2013; 8-hour Refresher, 2014
- Systems Dividends, GPS Training, Michael McGinnis, 2008

Former BPA Access:
- Non-Electrical Energized Access
- Transmission Line Corridor Access with TM Key

Total Years of Experience: 35
Total Years of BPA Experience: 25
Total Years of Party Chief Experience: 20

Contract Assignment: Survey Party Chief
Duties:
- Manages survey crew progress and work assignments
- Produces field notes, computations, and sketches
- Reviews all field products for accuracy and completeness
- Maintains survey and field equipment and supplies

Level of Experience / Years

A. Route Surveying: Don has performed route surveying for many BPA projects over the last 25 years, including substations, roads, transmission lines, topographic surveys, right-of-way acquisition surveys, and retraced right-of-way surveys. **[25 years of experience]**

B. Topographic Surveying: Don has performed topographic surveys including substations, roadways, bridges, and municipal infrastructure. Clients include BPA, local municipalities, Idaho Department of Transportation, Design-Build Transportation, and private developers. **[25 years of experience]**

C. GPS Experience: Don has performed large control projects, utilizing preplanning and adjustments to major GPS static control networks, incorporating OPUS Projects Manager adjustments, OPUS database use, and TBC adjustments. Don has performed RTK/RTN surveying for all types of projects including construction, boundary, as-built and topographic surveying. **[15 years of experience]**

D. Transmission Line Experience: Don has performed as surveyor on BPA transmission line projects since 1987, including boundary and topographic location of proposed transmission lines. The data provided for the development of transmission line access road and easement legal descriptions. **[25 years of experience]**

E. Resource Grade GPS Experience: Don has performed many resource grade GPS projects. **[22 years of experience]**

F. Cadastral Experience: Don has performed multiple cadastral surveys as part of many types of BPA projects, including substation surveys, radio site surveys, highway/road retracement surveys, and private boundary surveys. **[30 years of experience]**

G. Legal Descriptions & Exhibit Preparation: Don has worked on many legal descriptions and exhibit maps, including BPA A-tracts, additional width tracts, access road acquisitions, Radio Site acquisitions, Land Disposal Requests, Superseded tracts, utility and slope easements, highway/roadway strip descriptions for right-of-way and easement acquisitions, private access easements, property line adjustment descriptions, vesting deed descriptions and land development related descriptions. **[15 years of experience]**

H. Survey Maps with Microstation: Don has worked with Microstation/InRoads on project-related tasks, including hybrid maps, base maps, substation maps, access road and acquisition maps, record of surveys, and record drawings. **[5 years of experience]**

J. GIS Attribute Data Collection: Don has been involved in attributed data collection for 20 years, including Level (3) fiber optic location and attributes collection, high accuracy attributed data collection of BPA Radio inventory project, attributed data collection for BPA access road survey and survey grade attributed collection for surveying applications such as topographic surveys, retracements and boundary surveys. **[20 years of experience]**

K. LiDAR Point Cloud Data: Don has been working with LiDAR data more frequently in the last 10 years. Don's representative experience includes the review and/or extraction of LiDAR data performed for crossing inventories, data checks, beam path profiles/tree heights, mobile scan data for roadway projects, plan and profile hybridizations. **[10 years of experience]**

Normal Daily Duties Include: Survey crew management; scheduling; review of field notes, computations and sketches; QA of field data; maintenance of field equipment and supplies.												Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
Recent Relevant Project Experience / Size ($)	**Scope**																		
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**								
Colville-Republic No. 1 (BPA)/$56K	✓	✓	✓		✓		✓	✓					✓	✓	✓	✓	✓	✓	✓
Hot Springs-Rattlesnake No. 1 (BPA) /$72K	✓	✓	✓		✓	✓		✓		✓	✓		✓	✓	✓	✓		✓	
Rattlesnake/Garrison No. 1 (BPA)/$40K			✓		✓			✓					✓	✓	✓	✓		✓	

BRUCE L. CLARK – LAND SURVEY OFFICE TECHNICIAN

RUEN-YEAGER – SANDPOINT

Education
- General Studies, Palomar College – 1986

Special Training
- AutoCAD Training, 1997
- Survey Correspondence School, 1997
- Hybrid Map Training – BPA
- Shape File Training – BPA
- Plan Map Training – BPA
- Profile Training – BPA

Former BPA Access:
- Logical Access (myPC, eGIS, LIS)
- Badged Access
- ProjectWise

Total Years of Experience: 18
Total Years of BPA Experience: 7

Contract Assignment: Land Survey Office Technician
Duties:
- Edits and processes field data
- Reviews accuracy of data processing
- Produces acquisition documents
- Produces mapping and final; mapping products
- Provides a variety of survey data computations, including profile master drawings, dtm surface models, earthwork volumes, and LiDAR
- Provides QA/QC of work products

LEVEL OF EXPERIENCE / YEARS

H. Survey Maps with Microstation: Working with Agencies like BPA and ITD has provided many opportunities to produce Microstation deliverables for a variety of survey applications. Some of these include substation topo and retracement maps, plan maps, hybridized maps, survey base maps for transmission lines, radio sites and access road acquisitions, exhibit maps for acquisitions, intelligent digital terrain models (DTM), shape files, roadway retracement and monumentation surveys, right-of-way roll maps, records of surveys, construction calculation maps and as-built maps. **[7 years of experience]**

I. Surveying Across Tribal/Sensitive Areas: Working with BPA, Bruce had opportunities to work on projects that included many different types of public and private land ownerships including Tribal Lands and lease acquisitions, Federal Aviation Administration sites, Forest Service/BLM lands, Railroad rights-of-ways, water intake plants, treatment plants, energized areas, wetland areas, in-water work areas and archaeological zones within construction sites. **[7 years of experience]**

J. GIS Attribute Data Collection and deliverables including ArcMap use: Bruce has created GIS attributes for BPA using ArcMap and Microstation for strip easements, i.e. access roads, land acquisition easements, approaches, and other GIS data for BPA and other municipalities. **[6 years of experience]**

K. LiDAR Point Cloud Data: Bruce's experience includes crossing inventories, data checks, plan and profile hybridizations and LiDAR verification for ground and aerial checks. **[6 years of experience]**

Normal Daily Duties Include: Provides a variety of survey data computations, including profile master drawings, dtm surface models, earthwork volumes, and LiDAR.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Bell-Boundary Fiber Optic (BPA)/$143K			✓	✓	✓			✓			✓					✓	✓	✓	✓
Grand-Coulee Bell No. 3 (BPA)/$52K			✓	✓	✓						✓					✓	✓	✓	✓
FY13-14 Surveying & Mapping Support (BPA)/$714K	✓	✓	✓		✓		✓	✓								✓	✓	✓	✓
Hotsprings-Rattlesnake No. 1 (BPA)/$135K	✓	✓	✓		✓	✓		✓		✓	✓					✓	✓	✓	✓

ART COLUNGA – SURVEY PARTY CHIEF — ALCANTAR – PORTLAND

Special Training
- MicroStation and CAD Civil 3D
- US Army Corps of Engineers Quality Assurance Training

Registrations
- ODOT – AC Certification

Contract Assignment: Survey Party Chief
Duties:
- Communication and Coordination between Project Surveyor and crews
- Deliverables preparation for submission to BPA
- Field work and data collection, and data processing

Total Years of Experience: 7
Combined Years of GPS Experience: 7
Leica: 7

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Art's survey experience includes topographic data collection and construction layout of streets, roads, bridges, and various utilities; field crew management; and field QA and construction layout efforts using constant communication with field crews to bring the project to completion, on-time and on-budget. **[10 years of experience]**

B. Topographic Surveying: Art's experience includes surveying, field quality assurance, and management of up to six crews on a variety of project types including roads, bridges, and retaining walls. He has provided surveying notes, project pictures, surveying maps, tabulations of horizontal and vertical project control points. **[7 years of experience]**

C. GPS Experience: Art has worked on large regional-, county-, and city-sized horizontal and vertical control networks utilizing GPS and digital levels for as-built, construction staking of tunnels, highways, bridges, and pump stations. **[7 years of experience]**

D. Transmission Line Experience: Art's transmission line experience is primarily on PacifiCorp as-built drawings. **[1 year of experience]**

Normal Daily Duties Include:
Responsible for the management of up to six surveying crews. Responsible for the field QA construction layout and field conflict resolution by communicating between the field crews and office staff.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
OR 217 : Sunset Highway – Tualatin Valley Highway Section (ODOT)/$450K	✓	✓	✓	✓										✓	✓		✓	✓	
Portland to Milwaukie Light Rail (TriMet)/$3.5M	✓	✓	✓	✓										✓	✓		✓	✓	
Tillikum Crossing Bridge (TriMet)/$500K	✓	✓	✓	✓										✓	✓		✓	✓	

ED ALCANTAR – SURVEY TECHNICIAN — ALCANTAR – PORTLAND

Education
- Emily Griffith Technical School

Special Training
- Right-of-Way Engineering – ODOT
- Micro Station and CAD Civil 3D
- US Army Corps of Engineers Quality Assurance Training
- OSHA 30 Hours

Registrations
- Oregon CCB #182936
- ODOT – General Inspector Certification

Contract Assignment: Survey Technician
Duties:
- Communication and Coordination between Project Surveyor and crews
- Deliverables preparation for submission to BPA
- Field work and data collection, and data processing for projects

Total Years of Experience: 7
Combined Years of GPS Experience: 4
Leica: 4

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Ed's survey experience includes topographic data collection and construction layout of streets, roads, bridges, and various utilities. Construction layout efforts include constant communication with field crews to bring the project to completion, on-time and on-budget. [**10 years of experience**]

B. Topographic Surveying: Ed's experience includes surveying, field quality assurance, and management of up to six crews on a variety of project types including roads, bridges, and retaining walls. He provided surveying notes, project pictures, surveying maps, tabulations of horizontal and vertical project control points. [**7 years of experience**]

C. GPS Experience: Ed has worked on large regional, county, and city sized horizontal and vertical control networks utilizing GPS and digital levels for as-built, construction staking of tunnels, highways, bridges, and pump stations. [**7 years of experience**]

D. Transmission Line Experience: Ed's transmission line experience is primarily on PacifiCorp as-built drawings. [**1 year of experience**]

H. Survey Maps with Microstation: Ed's construction layout experience includes the re-drafting of 100 percent engineers of record drawings to be able to provide QA/QC for the entire project. The re-drafting included in many cases redesign of street lighting, ADA slopes, bridge super-elevation grading, pile location, and MSCE wall grading and locations, and as-built maps. [**7 years of experience**]

Normal Daily Duties Include: Responsible for electronic file management and CADD point control files for the Surveying Construction Staking. Responsibilities include supporting crew in the field, as well as acting as party chief.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
OR 217 : Sunset Highway – Tualatin Valley Highway Section (ODOT)/$450K	✓	✓	✓	✓				✓				✓		✓	✓		✓	✓	✓
Portland to Milwaukie Light Rail (TriMet)/$3.5M	✓	✓	✓	✓								✓		✓	✓		✓	✓	✓
Tilikum Crossing Bridge (TriMet)/$500K	✓	✓	✓	✓								✓		✓	✓		✓	✓	✓

William Colisch, PLS – Registered Land Surveyor

Education
- AA – El Camino College – 1982

Special Training
- Trimble Certified GPS Training 1994, 1998-2003
- AutoCad Training, 1991
- Horizontal Control Networks & LSQ Networks – ODOT, 1996
- GPS Derived Heights – NGS, 1997
- Adjustment of Surveying Errors by Least Squares, 1999
- Surveying Errors & Their Analysis – Wolf & Ghilani, 1999

Contract Assignment: Project Surveyor
Duties:
- GPS planning, processing and adjustments; communication with team Project Manager and crews
- Record of surveys, legal descriptions, and mapping determinations
- Deliverables preparation for submission to BPA
- Field work and data collection, and data processing

William Colisch PLS PC – Grants Pass

Registrations
- Professional Land Surveyor, California No. 6151
- Professional Land Surveyor, Oregon No. 2659
- Professional Land Surveyor, Washington No. 44336

Affiliations
- Professional Land Surveyors of Oregon
- National Society of Professions Surveyors (NSPS)
- Past Secretary of PLSO Rogue River Chapter
- Oregon State Board of Examiners for Engineering and Land Surveying – Peer Review Committee

Total Years of Experience: 34
Combined Years of GPS Experience: 20
RTK: 17

Level of Experience / Years

A. Route Surveying: William has worked on various projects for Caltrans, ODOT, Jackson County, and private developers. **[25 years of experience]**

B. Topographic Surveying: William has performed topographic surveying for radio sites, substations, large sewer treatment plants, industrial yards, roadways, bridges, city streets, and utilities. Clients include Caltrans, ODOT, various cities & counties, PacifiCorp, and private developers. **[34 years of experience]**

C. GPS Experience: William has worked on large regional and mid-sized to small photo control projects, and horizontal and vertical control networks utilizing GPS **[20 years of experience]**

D. Utility Route Surveys: William has worked on boundary and topographic location of proposed utility routes for the purpose of writing legal descriptions for easements for the new or re-located facilities, access roads and radio sites. **[25 years of experience]**

E. Resource Grade GPS Experience: William has performed resource grade data collection and processing for many projects, including wetland delineations, bore holes and utility as-built surveys, access road surveys, radio inventory surveys with Trimble equipment and with Pathfinder Office. **[20 years of experience]**

F. Cadastral Experience: William has worked on various projects including substation surveys, radio site surveys, highway/road retracement surveys and private boundary surveys, land development projects and subdivision of section surveys. **[25 years of experience]**

G. Legal Descriptions & Exhibit Preparation: William has worked on many types of legal descriptions and exhibit maps, including access road acquisitions, Radio Site acquisitions, Land Disposal Requests, utility and slope easements, highway/roadway strip descriptions for right-of-way and easement acquisitions, private access easements, property line adjustment descriptions, vesting deed descriptions and land development related descriptions. **[25 years of experience]**

Normal Daily Duties Include: GPS planning, processing, and adjustments; communicating with team Project Manager and crews; right-of-way and centerline resolution and retracement surveys; writing legal descriptions; construction calculations and staking. Field work and data collection for projects.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
60 1A Certificates (T-Mobile)/$35K		✓	✓															✓	✓
Eight Cell Sites (US Cellular)/$15K	✓	✓	✓												✓	✓		✓	✓
Three Cell Sites (Vertical Bridge Towers)/$9K	✓	✓	✓												✓	✓		✓	✓

KEITH COLISCH – SURVEY PARTY CHIEF — WILLIAM COLISCH PLS PC – GRANTS PASS

Education
- Field Surveying Technician, Renton Technical College – 2008

Special Training
- Trimble Certified GPS Training, 2009

Total Years of Experience: 12
Combined Years of GPS Experience: 10

Contract Assignment: Survey Party Chief
Duties:
- Communication with team Project Surveyor and crews
- Field work and data collection, and data processing
- Processing data and preparing deliverables for submission to BPA

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Keith has worked on various projects for Caltrans, ODOT, Jackson County, and private developers. **[10 years of experience]**

B. Topographic Surveying: Keith has performed topographic surveying for radio sites, substations, large sewer treatment plants, industrial yards, roadways, bridges, city streets, and utilities. His clients include Caltrans, ODOT, various Cities & Counties, PacifiCorp, and private developers. **[12 years of experience]**

C. GPS Experience: Keith has performed mid-sized to small photo control projects, and horizontal and vertical control networks utilizing GPS. **[10 years of experience]**

D. Utility Route Surveys: Keith has performed boundary and topographic location of proposed utility routes for the purpose of writing legal descriptions for easements for the new or re-located facilities, access roads and radio sites. **[10 years of experience]**

Normal Daily Duties Include: Researching and communicating with project surveyor about current project. Collecting field data (control network, topographic, monument recovery), and processing collected data for final deliverables.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
60 1A Certificates (T-Mobile)/$35K		✓	✓															✓	✓
Eight Cell Sites (US Cellular)/$15K	✓	✓	✓												✓	✓		✓	✓
Three Cell Sites (Vertical Bridge Towers)/$9K	✓	✓	✓												✓	✓		✓	✓

TYLER J. SWEET, PLS – REGISTERED LAND SURVEYOR	APS SURVEY & MAPPING – BELLEVUE

Education
- AAS – Survey Technology, University of Alaska – 1973

Special Training
- Trimble Certified GPS Training, 2003, 2005, 2007, 2013
- Proficient in AutoDESK Civil 3D Mapping including 2016
- Procedures for Energized Access, Permits, and Clearance – BPA
- OPUS-Projects Manager Training – NGS, 2011

Registrations
- Professional Land Surveyor, Idaho No. 9983
- Professional Land Surveyor, Oregon No. 2701
- Professional Land Surveyor, Washington No. 29293
- Professional Land Surveyor, Alaska No. 4758
- US Mineral Surveyor

Contract Assignment: Project Surveyor

Duties:
- GPS planning, processing and adjustments; communication with Project Manager and crews
- Records of survey and legal descriptions
- Full oversight of deliverables preparation for submission to BPA
- Directing standards and procedures for all field work and data collection, and data processing for projects

Total Years of Experience: 43
Combined Years of GPS Experience: 28
RTK: 15
Cell Phone RTK: 6
Coop. CORS/GPS Base: 15
RTN Networks: 6
Static: 28

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Tyler has conducted hundreds of route surveys. He has tailored crews, CADD mappers, and changing methods and standards of practice, to the specific needs of his clients. A recent survey includes 19 miles of highline, utility, tree, and boundary survey for Puget Sound Energy through east Seattle. **[40 years of experience]**

B. Topographic Surveying: Tyler has been performing topographic and utility mapping for decades. Under APS's current contract with the US Army Corps of Engineers, he has completed over 20 detailed topographic and utility surveys each year. With the advent of CIM, the on base mapping has been in true 3D. **[43 years of experience]**

C. GPS Experience: Tyler's first venture into GPS was in 1985, on the "Backscatter Radar Projects" in Alaska. As technology has improved, Tyler has embraced it fully. He uses 2015 model Trimble and Topcon GPS units connected to the virtual reference system or broadcast CORS. Depending on the project, Tyler runs RTK, Fast (Rapid) Static and Static surveys year-round. He recently completed a fast static survey of Pacific Coast Tidal Benchmarks; submitting the result to OPUS and CORs. **[31 years of experience]**

D. Transmission Line Experience: Tyler has been educating APS crews and technicians to survey and map transmission lines since 1999. He has developed codes and trained personnel, who can accurately map, towers, insulators, cross arms, conduit (catenaries), gains and more. Typical tasks include staking vaults and poles, as-built highlines, or working in a substation. **[16 years of experience]**

F. Cadastral Experience: In 1976, Tyler became a US Mineral Surveyor. The BLM's rigorous Mineral Survey exam required significant knowledge of the Cadastral survey system. Tyler has recently helped resolve longstanding Cadastral issues between the State of Washington, BLM, and the Shoalwater Indian Reservation. Tyler has also completed three original surveys under contract to BLM. **[39 years of experience]**

G. Legal Descriptions & Exhibit Preparation: Tyler typically prepares legal and/or easement descriptions; along with an Exhibit for a variety of reasons. The description and exhibit can range from simple metes and bounds, to aquatic leases, to shoreland determination. **[36 years of experience]**

H. Survey Maps with Microstation: APS uses AutoDESK Civil 3D as their primary mapping tool. However, they use Land XMLs and Microstation transfers to convert (to and from) our CADD mapping for the US. Army Corps of Engineers and other clients relying on Microstation or PLS-Cadd (for Power Line Systems). They are equally adept at translations to ERSI and other GIS tools. **[16 years of experience]**

I. Surveying Across Tribal/Sensitive Areas: Tyler has worked closely for, or with, dozens of Indian and First American People over the last 43 years. He has spent time with Yupik people, Aleuts, Tlingit, Nisqually, Nez Perce, and the tribes on the Olympic Peninsula and Puget Sound. **[43 years of experience]**

J. GIS Attribute Data Collection: Tyler is currently finishing a yearlong survey of over 2,000 stormwater structures for the City of Renton. APS taps into the City's GIS System using an iPad. This allows them to look at what structures the City believes it has and a method to communicate back to the City. They locate each structure with 2 or 3 cm. accuracy (State Plane Coordinates and NAVD88/2012A vertical), adding grate type, structure condition and materials, and the inverts, direction, material, and size of each conveyance. APS updates the City's GIS and adds newly found structures. **[16 years of experience]**

K. LiDAR Point Cloud Data: Over the past five years, Tyler has used a variety of LiDAR systems. These include mapping forest conditions within a 23-square-mile area. Recently, he has used "Green" beam to map river bottom and shallow lakes. He uses the data to enable APS to augment aerial and ground LiDAR for missing elements such as utilities and wetlands. **[5 years of experience]**

Normal Daily Duties Include: GPS planning, processing, and adjustments; communication with team Project Manager and crews; right-of-way and centerline resolution and retracement surveys; writing legal descriptions; construction calculations and staking. Field work and data collection for projects.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Joint Base Lewis McChord Scrapyard Survey (USACE)/$21K	✓	✓	✓					✓				✓	✓	✓	✓		✓	✓	✓
City of Renton Stormwater GIS and As-built (Renton)/$228K	✓	✓	✓					✓		✓		✓	✓	✓	✓		✓	✓	✓
Topo & Utility Survey Albeni Falls Dam, ID (USACE)/ $12K	✓	✓	✓		✓					✓		✓	✓	✓	✓		✓	✓	✓
Electron Land Exchange & Flume (PSE)/$36K	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
Lake Tapps Aerial & LiDAR Mapping (Cascade Water)/$10K		✓	✓							✓	✓	✓	✓	✓	✓		✓	✓	✓
Deformation Surveys Howard Hanson, Mud Mt., Chief Joseph Dams (USACE)/$35K	✓		✓	✓	✓	✓	✓		✓		✓	✓	✓	✓		✓	✓	✓	✓
8 Mile Transmission & Utility Survey (Ft. Lewis)/$46K	✓	✓	✓	✓			✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
Green River Thalweg and LiDAR survey (USACE)/$28K	✓	✓	✓				✓	✓					✓	✓	✓	✓	✓	✓	✓
Master Plan GIS Mapping (Bellevue College)/$30K	✓	✓	✓					✓		✓		✓	✓	✓	✓		✓	✓	✓
Herron Island Ferry Landing & Bathymetric Survey (PND)/$17K	✓	✓	✓	✓		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓

SCOTT EDWARDS, PLS, CFEDS – REGISTERED LAND SURVEYOR	APS SURVEY & MAPPING – BELLEVUE

Education
- Certificate of Geographical Information Systems, University of Washington – 2014
- MBA – City University – 2004
- BS – City University – 2002
- AAS - Civil Engineering Technology/Land Surveying – Renton Technical College – 1997

Special Training
- Topcon Magnet Field Software
- Leica Geomatic Office Software
- CFedS – Accretions in the Public Land Survey System
- CFedS – Geographic Coordinate Database
- CFedS – 2009 Manual of Survey Instructions
- CFedS – Three case studies

Registrations
- Professional Land Surveyor, Oregon No. 89562PLS
- Certified Federal Surveyor (CFedS), No. 1576
- Professional Land Surveyor, Washington No. 41024

Affiliations
- Land Surveyors' Association of Washington
- Renton Technical College – Land Surveying Engineering Program Advisory Committee

Contract Assignment: Project Manager / Project Surveyor
Duties:
- Responsible charge for all survey related products for projects assigned
- Lineout and Quality Control of field staff
- Oversight and direction for office technicians and drafters
- Preparation and review of records of survey, legal descriptions for easement or acquisitions, and mapping products
- Deliverables preparation for submission to BPA

Total Years of Experience: 20
Combined Years of GPS Experience: 20
Static 20
RTK: 15
Coop. CORS/GPS Base: 15
Cell Phone RTK: 10
RTN Networks: 10

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Scott began working on route surveys as soon as he graduated from college. He started as an Instrument Person, and worked up through the ranks to Party Chief, Office Technician, and Assistant Project Surveyor. During the last 12 years, he has worked as a Professional Land Surveyor, and Project Manager for hundreds of route surveys. Most of the routes he has surveyed are along utility corridors, and mainly for electrical infrastructure. In addition to utility corridors, he has prepared route surveys for sidewalk and road projects. **[20 years of experience]**

B. Topographic Surveying: Scott has been involved with hundreds of topographic survey projects. For the first six years of his career, he was mostly on a field crew running an instrument or rod. During the last 14 years, he has been preparing proposals, directing field crews, processing data, drafting CAD files, managing office technicians, overseeing quality control, and preparing final deliverables for topographic survey projects. Most of these topographic projects also involve boundary surveys. **[20 years of experience]**

C. GPS Experience: Scott has used GPS from the beginning of his career. During the late 90s, his experience was mostly static observations and processing of the GPS vectors. He still works on static GPS surveys today, but in many cases RTN GPS surveying has become accurate enough for smaller or midsized projects. In the early 2000s, Scott's employer bought a Topcon Hiper RTK system. This system used the traditional RTK base and rover setup with corrections broadcast over a radio link to the base station. In 2005, his firm began transitioning to getting their corrections through cell phone networks to permanent base stations. This system works well in areas that have good cell phone coverage but they still resorted to static and traditional RTK in areas that lack coverage. He has also used cell phone repeaters and other satellite data service for corrections for some areas. **[20 years of experience]**

D. Transmission Line Experience: The bulk of Scott's transmission line surveying experience is for Puget Sound Energy. For most of his survey career, he has worked for companies that have provided land survey services to Puget Sound Energy or other electric purveyors in Western Washington. Scott primarily manages the field crew and office staff, and completes the boundary analysis. He has prepared many Records of Surveys for numerous transmission projects. This includes Records of Surveys for Aquatic Use Permits. He has also prepared hundreds of legal descriptions for these types of projects. These legal descriptions are mostly for easements, but sometimes included acquisitions. **[15 years of experience]**

E. Resource Grade GPS Experience: While most of Scott's experience is Survey Grade GPS, he has worked on several projects where he was involved with the collection of Resource Grade GPS. These projects include a WSDOT project and few projects for several municipalities where resource grade GPS was requested. These projects were for asset inventory. **[1 year of experience]**

F. Cadastral Experience: Being a Professional Licensed Land Surveyor and a Certified Federal Surveyor, Scott has intensively studied the Public Land Survey System and completed many cadastral surveys. These include projects for Puget Sound Energy, Seattle City Light, WSDOT, and the Army Corps of Engineers. One cadastral surveying project example is the Electron Land Exchange where Scott and his team broke down 17 Sections that were located in a heavily wooded portion of Pierce County. **[12 years of experience]**

G. Legal Descriptions & Exhibit Preparation: Working for Puget Sound Energy and Seattle City Light has given Scott plenty of opportunities to prepare legal descriptions and corresponding map exhibits. These are mostly for proposed easements. He often gets a CAD or PDF file from a real estate representative or engineer outlining the utility needs and then uses sound surveying principles to establish areas that suit their needs. Scott has averaged at least one of these a week for the last six years. **[15 years of experience]**

H. Survey Maps with Microstation: Scott worked with Microstation/InRoads as a primary CAD package for about two and half years from 2005 to mid-2007. He used Microstation for the WSDOT I-90 Bellevue Way to Mercer Island Lid project. Prior to that, Scott mainly used AutoDesk products including Land Desk Top and Civil3D, and he currently uses these products. When clients request Bentley products, Scott has been very successful in converting his files to Microstation formats. **[15 years of experience]**

I. Surveying Across Tribal/Sensitive Areas: Scott has been working on Tribal Lands since early in his surveying career. From 1999 to 2004 he worked on a contract with the Colville Confederated Tribes for about 20 miles of road projects. He worked both in the field and as office project support on these projects. From 2005 to mid-2007 he was a Project Surveyor for White Shield Inc., a Native American-owned survey and environmental firm. While there, Scott completed Record of Surveys, topographic mapping, and platting projects for the Puyallup and Tulalip Tribes. At APS Survey & Mapping, Scott supported the Army Corp of Engineer's dam removal for the Lower Elwha River. The project required constant coordination with the Lower Elwha Tribe. Another Army Corp of Engineer project near Tokeland involved significant interaction with the Shoalwater Bay Tribe. Scott was also the Project Manager/Surveyor on two City of Seattle projects on and near to the Sauk-Suiattle Tribe. **[16 years of experience]**

J. GIS Attribute Data Collection: APS has performed significant GIS Attribute Data Collection for the City of Renton over last several years. They have mapped the position of several thousand catch basin, outfalls and conveyances using Survey Grade GPS supplemented with Total Stations. While at a storm structure, they collected attribute data, such as type of grate, pipe invert elevations, pipe size and type, and condition. **[10 years of experience]**

K. LiDAR Point Cloud Data: Over the past five years, Scott has used a variety of LiDAR systems. The most recent project is the Energize Eastside Project. APS used mobile LiDAR mapping truck to map about two miles of the proposed route. This data was combined with 3D laser scanning, GPS, and total stations data to provide a complete map of the 19-mile route. **[5 years of experience]**

Normal Daily Duties Include: GPS planning, processing, and adjustments; communication with team Project Manager and crews; right-of-way and centerline resolution and retracement surveys; writing legal descriptions; construction calculations and staking. Field work and data collection for projects.

Recent Relevant Project Experience / Size ($)	Scope										Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Energize Eastside, Puget Sound Energy (PSE)/$500K	✓	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
Alderton-Krain Corner (PSE)/$200K	✓	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
Boeing Aerospace Line (PSE)/$200K	✓	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
Electron Heights I & II (PSE)/$400K	✓	✓	✓	✓		✓	✓		✓			✓	✓		✓	✓	✓	✓	✓
Lakeside Substation Boundary & Topo (PSE)/$60K	✓	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
South Whidbey Island 115kV (PSE)/$75K	✓	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
Ross Powerhouse Rockslide (Seattle City Light)/$29K	✓	✓	✓			✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
14 Surplus Substation Record of Surveys (Seattle City Light)/$55K	✓	✓	✓			✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
Storm System Field Mapping (City of Renton)/$563K			✓							✓		✓	✓	✓			✓	✓	✓
I-90 Bellevue Way to Mercer Island Lids (WSDOT)/$200K	✓	✓	✓		✓	✓		✓					✓	✓	✓		✓	✓	✓

MARK A. BYRD, PLS – REGISTERED LAND SURVEYOR — PERIGEE – SALT LAKE

Education
- Boundary and Legal Principles of Surveying–Palm Beach Community College, 1989

Special Training
- Practices and Legal Principles of Surveying–University of Utah, 1980
- Mathematics and Science classes–University of Utah, 1978
- Ongoing courses, conferences and seminars, 1994-Present

Registrations
- Professional Land Surveyor, Utah No.160206
- Professional Land Surveyor, Nevada No. 9962
- Professional Land Surveyor, Arizona No. 31016
- Professional Land Surveyor, Colorado No. 38283

Affiliations
- Utah Council of Land Surveyors
- Nevada Association of Land Surveyors

Contract Assignment: Project Surveyor
Duties:
- GPS planning, processing and adjustments; communication with team Project Manager and crews
- Record of surveys, legal descriptions, and mapping determinations
- Deliverables preparation for submission to BPA
- Field work, data collection, and data processing for projects

Total Years of Experience: 40
Combined Years of GPS Experience: 10
RTK: 10
Cell Phone RTK: 10
Coop. CORS/GPS Base: 10
RTN Networks: 10

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Mark has completed topographic surveys on various roadway projects in Utah, Nevada, and Florida, including state and local roadway systems in rural and urban environments. **[27 years of experience]**

B. Topographic Surveying: Mark has worked on various roadway projects in Nevada and Florida, as well as cellular projects in Utah and Nevada. His work on cellular projects has included rural/remote locations and urban environments. **[40 years of experience]**

C. GPS Experience: Mark as worked on cellular projects in Utah and Nevada. He uses RTK/RTN surveying for all types of projects including construction, boundary, retracement, as-built and topographic surveying. **[10 years of experience]**

E. Resource Grade GPS Experience: Mark has worked on projects in Nevada, which have required GPS expertise. He provided GPS expertise for the design of the outer loop road UTA Trax predesign from the airport to downtown. **[10 years of experience]**

F. Cadastral Experience: Mark has worked on various sites and roadways in Nevada and Utah. **[30 years of experience]**

G. Legal Descriptions & Exhibit Preparation: Mark has completed parcel exhibits and descriptions for roadway projects in Nevada and Florida. He has prepared boundary descriptions and exhibit maps for access road acquisitions, utility and slope easements, highway/roadway strip descriptions for right-of-way and easement acquisitions, private access easements, property line adjustment descriptions, vesting deed descriptions, and land development related descriptions. **[30 years of experience]**

I. Surveying Across Tribal/Sensitive Areas: Mark provided survey work on various projects for the Navajo Nation in Northern Arizona. **[20 years of experience]**

J. GIS Attribute Data Collection: Mark has worked on various GIS projects in Utah and Nevada. He has performed high accuracy attributed data collection for municipal utilities GIS databases, and survey grade attributed collection for surveying applications like topographic surveys, retracements and boundary surveys. **[10 years of experience]**

Normal Daily Duties Include: GPS planning, processing, and adjustments; communication with team Project Manager and Field Crews; right-of-way and centerline resolution and retracement surveys; writing legal descriptions; construction calculations and staking. Field work and data collection for projects.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Survey pre design for the UTA trax line from the SLC Airport to downtown (SLC airport UTA)/$100K	✓	✓	✓		✓	✓	✓					✓	✓						✓
Survey pre design work for a portion of the I-215 project between Tropicana Ave and Flamingo /$500K	✓	✓	✓		✓	✓	✓					✓	✓	✓					✓

MARSHALL BYRD, PLS – REGISTERED LAND SURVEYOR	PERIGEE CONSULTING– SALT LAKE
Education ▪ AS – Computer Science, Salt Lake Community College – 2002 **Special Training** ▪ Trimble Certified GPS Training ▪ Microstation Training ▪ GIS Training	**Registrations** ▪ Professional Land Surveyor, Utah No. 6390728 **Affiliations** ▪ Utah Council of Land Surveyors
Contract Assignment: Project Surveyor **Duties:** ▪ Project Manager and crew Manager. GPS planning, processing and adjustments ▪ Plats, records of survey, legal descriptions, mapping ▪ Field work and data collection, construction layout, and data processing for projects	**Total Years of Experience: 21** **Combined Years of GPS Experience: 15** RTK: 15 Cell Phone RTK: 10 Coop. CORS/GPS Base: 15 RTN Networks: 10

LEVEL OF EXPERIENCE / YEARS

A. Route Surveying: Marshall has experience in county road and city street projects, as well as major utility projects, such as sewer, storm drain, water canal, aqueducts, gas pipeline, and flume projects. He has worked on numerous freeway, highway, and county road and energy projects. He has performed retracement surveys primarily for bridge replacements and realignments, transmission lines, substations and radio sites. His survey work includes topographic data collection and construction layout of streets, roads, bridges and various utilities, including the design and preparation of legal descriptions for acquired right-of-way and easements. [**20 years of experience**]

B. Topographic Surveying: Marshall performs topographic surveying for cellular radio sites, substations, large sewer treatment plants, industrial yards, flumes, roadways, bridges, city streets, utilities, and municipal water tanks. [**20 years of experience**]

C. GPS Experience: Marshall has extensive experience using GPS for large, regional and mid-sized to small projects, and horizontal and vertical control networks utilizing GPS and digital levels. He frequently uses OPUS Projects Manager adjustments, OPUS database, and TBC adjustments. He uses RTK/RTN surveying for all types of projects including construction, boundary, retracement, as-built and topographic surveying. [**15 years of experience**]

D. Transmission Line Experience: Marshall has experience with boundary and topographic location of proposed transmission lines for the purpose of writing legal descriptions for easements for the new or re-located transmission lines access roads and radio sites. [**20 years of experience**]

E. Resource Grade GPS Experience: Marshall has performed resource grade data collection and processing for many projects. His relevant projects include a gas pipeline for Kern River, Kennecott Utah Copper, and roads and communication towers. [**15 years of experience**]

F. Cadastral Experience: Marshall has performed multiple cadastral surveys as part of many types of projects over the years, including, substation surveys, radio site surveys, highway/road retracement surveys and private boundary surveys, land development projects and subdivision of section surveys. [**15 years of experience**]

G. Legal Descriptions & Exhibit Preparation: Marshall has written countless boundary descriptions and exhibit maps for access road acquisitions, radio site acquisitions, utility and slope easements, highway/roadway strip descriptions for right-of-way and easement acquisitions, private access easements, property line adjustment descriptions, vesting deed descriptions and land development related descriptions. [**15 years of experience**]

H. Survey Maps with Microstation: Marshall is a very experienced drafter. He has extensive experience using Microstation as well as AutoCAD. He creates plat maps, topo maps, retracement maps, plan maps, hybridized maps, survey base maps for transmission lines, radio sites, and access road acquisitions, exhibit maps for acquisitions, intelligent digital terrain models (DTM), shape files, roadway retracement and monumentation surveys, right-of-way roll maps, records of surveys, construction calculation maps and as-built maps. [**15 years of experience**]

I. GIS Attribute Data Collection: Marshall is experienced in attributed data collection. He has performed high accuracy attributed data collection for municipal utilities GIS databases, and survey grade attributed collection for surveying applications like topographic surveys, retracements and boundary surveys. [**15 years of experience**]

K. LiDAR Point Cloud Data: Marshall has worked with LiDAR data as well as 3D scanning point cloud data. He has used the data to extract features from the point clouds as well as creating surfaces, data checks, building heights, etc. **[5 years of experience]**

Normal Daily Duties Include: GPS planning, processing and adjustments; communication with team Project Manager and crew, right-of-way and centerline resolution and retracement surveys, monumentation and boundary surveys, writing legal descriptions, construction calculations, and staking. Field work and data collection for projects.

Recent Relevant Project Experience / Size ($)	Scope											Project Manager	Project Surveyor	Control Network	Route Survey Field Work	RW / Easement Acquisition	QA/QC	Field Note Documents	Deliverables Preparation
	A	B	C	D	E	F	G	H	I	J	K								
Multiple miles of utilities, transmission lines, aqueducts. Easements, boundary surveys, section retracements, construction staking (Kennecott Utah Copper)/$1.2M	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Easements, boundary, construction staking (Miller Motorsports Park)/$2M	✓	✓	✓		✓	✓	✓		✓			✓	✓	✓			✓	✓	✓
Herriman 7530 West right-of-way takes, dedication, boundary (UDOT)/$50K	✓	✓	✓		✓	✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
UTA Trax Airport line right-of-way takes, dedications, condemnations (UTA)/$60K	✓	✓	✓		✓	✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓

2. ▪ Technical Approach

OBEC'S APPROACH TO ALL TASKS:

In addition to the specific technical approach for each task detailed on the following pages, we implement these steps on every project:

- ✓ Once a Work Assignment (WA) is issued, the Survey Manager will clarify the scope of work, prepare the project budget, and submit it to COTR.
- ✓ The Survey Manager will negotiate a fair and reasonable budget with the COTR for completing the work, including agreement on using subcontractors to reduce travel costs.
- ✓ The Survey Manager will assign staff and hold an internal kick-off meeting to review the WA and discuss it with the team.
- ✓ The Project Surveyor will download and review BPA-supplied data from ProjectWise.
- ✓ The Project Surveyor will coordinate with BPA's project surveyor and, if needed, BPA's Substation Operator, prior to sending the crew to the field.
- ✓ The Field Crew will complete a site hazard assessment and hold an on-site safety meeting.
- ✓ Using the WA, the Field Crew will complete all field tasks.
- ✓ The Project Surveyor will work with the Survey Party Chief and the Survey Technician to prepare the deliverables.
- ✓ The Project Surveyor will use the WA and relevant BPA checklists to QC all deliverables.
- ✓ The Survey Manager will QA the deliverables to verify that they conform to BPA standards.
- ✓ The Project Surveyor will verify that all deliverables are complete and in the correct format and submit deliverables.

BOUNDARY AND TOPOGRAPHIC SURVEYS FOR HEAVILY WOODED SUBSTATION SITE

General Technical Approach

- The Project Surveyor will research all required records needed for boundary determinations with the appropriate state or county agencies.
- The Project Surveyor will determine if any alternative methods for data collection need to be considered, such as terrestrial scanning, LiDAR, or photogrammetry.
- The Project Surveyor will review the project plan and controlling monuments and topo limits with the Field Crew prior to their field visit.



Retracement survey of a transmission line in the Willamette Valley.

- The Field Crew (Survey Party Chief and Survey Technician) will recover existing control, baseline monuments, cadastral monuments, property monuments, and establish supplemental control if needed.
- The Field Crew will take close-up photos of all recovered monuments and the project site.
- The Field Crew will tie recovered monuments and supplemental control using the specified horizontal and vertical datum as specified in the WA. They will process GPS observations using OPUS-RS or OPUS Projects.
- The Survey Party Chief will process the field data while still in the field and submit it to the OBEC Project Surveyor for review. When monuments cannot be observed, the Field Crew will run a terrestrial traverse closing onto GPS control points established for the project and complete a Least Squares Adjustment using Trimble Business Center (TBC).
- For boundary work, the Field Crew will tie any encroachments. If they cross the property line(s), the Field Crew will tie encroachments at least 20 feet on each side of the property line(s).
- The Field Crew will brush out the required areas for adequate access to collect topographic data at the WA-specified intervals.
- The Field Crew will collect topographic data and take pictures as specified in the WA. They will include the photo log in the field notes.
- The Field Crew will take field notes on the appropriate BPA field note forms.
- The Survey Party Chief will download the field data and process it using TBC.
- The Survey Party Chief will import the field data into Bentley Power InRoads V8i and create the survey basemap to give to the Drafter/CAD Operator II for final drafting of the topographic basemap.
- The Survey Party Chief will create the DTM of the site.
- The Project Surveyor will begin the boundary resolution as soon as the Field Crew ties the monuments and sends the data.

- The Project Surveyor will complete the boundary retracement using BPA-supplied data, adjoining deeds, field tied monuments, and other evidence of boundaries such as fences and improvements. The Survey Manager or another Project Surveyor will review the retracement before drafting starts.
- The Project Surveyor will work with the Drafter/ CAD Operator II to produce the final topographic basemap and/or the Record of Survey (ROS) for the boundary retracement.
- An independent Project Surveyor will provide QC of the ROS and the Survey Manager will provide QA of the ROS prior to submittal to BPA.
- The Project Surveyor will send the ROS to BPA for review.
- The Project Surveyor will incorporate BPA feedback into the ROS.
- The Field Crew will return to the field to set any monuments, post accessories, and take pictures of the newly set monuments.
- The Project Surveyor will complete and submit the ROS for recording with the appropriate agency.
- An independent Project Surveyor will provide final QC of the final ROS and supporting documents.
- The Survey Manager will provide QA of all deliverables before submittal to BPA.

Potential Equipment/Software

- Fully stocked 4x4 Truck w/ winch and tire chains
- Trimble Static and/or RTK/RTN GPS receivers
- MiFi Hot Spot
- Trimble Data Collector(s) w/ Trimble Access
- Trimble Robotic Total Station w/ reflectorless capability
- Trimble Digital Level (DiNi)
- Trimble Resource Grade GPS receiver
- 2-Way Radios
- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet

Potential Access Rights Needed

- Energized Access
- ProjectWise Access
- Logical Access
- TLM Access
- Permission to Enter Properties

Potential Labor Classes

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician
- Drafter/CAD Operator II

BPA Project Examples

- Ostrander Substation Topo
- Sappho Substation Topo

STAKE TRANSMISSION STRUCTURES FOR CONSTRUCTION

General Technical Approach

- The Field Crew will establish or verify controlling towers, distances, and/or monuments. Wiggling on line may be required. If at an angle point, the Field Crew will verify deflection angles are correct and adjust calculations if needed.
- The Field Crew will lay out proposed structure with offsets to the proposed structures as instructed by the WA or contractor.
- The Field Crew will compute any guywire attachments and ground locations and stake as required.
- The Field Crew will take photos of all stakes set and of the general project site. They will include a photo log in the field notes.
- The Survey Party Chief will send survey data to the office prior to leaving the project site or area if connection is available. The Project Surveyor can then verify the staking has been completed correctly.
- Once the crew returns from the field, the Survey Party Chief will import data to TBC, process stakeout reports, and export data to a basemap.
- The Project Surveyor will complete an independent quality control check of the stakeout points in the base map and review the stakeout reports to confirm the structure was staked properly.
- The Survey Party Chief and Project Surveyor will complete the field notes and CFNI and prepare the deliverables in accordance with the WA.
- An independent Project Surveyor will provide QC of all deliverables.
- The Survey Manager will provide QA of all deliverables before they are submitted to BPA.

Potential Equipment/Software

- Fully stocked 4x4 Truck w/ winch and tire chains
- Trimble Static and/or RTK/RTN GPS receivers
- MiFi Hot Spot
- Trimble Data Collector(s) w/ Trimble Access
- Trimble Robotic Total Station w/ reflectorless capability
- Trimble Digital Level (DiNi)
- 2-Way Radios
- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet

Potential Access Rights Needed

- Energized Access
- ProjectWise Access
- TLM Access

Potential Labor Classes

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician

BPA Project Examples

- Albany-Eugene No. 1
- McNary Substation
- Forest Grove – Tillamook No. 1
- Harney Substation Radio Tower

STAKING FOR EARTHWORK TO ADDRESS AN IMPAIRMENT TO A TRANSMISSION LINE

General Technical Approach

- The Project Surveyor will complete any office calculations and control plans required for the slope and/or offset staking of the impairment area and review the information with the Field Crew.
- The Field Crew will establish or verify on-site control.
- The Survey Party Chief will verify controlling towers and/or wires and clearances of the structures/wires from the ground for the impairment area.
- The Survey Party Chief will use the provided calculations or determine in the field the required vertical alignment and cut width and slide slopes to accurately slope stake the footprint of the earthwork required to fix the impairment.
- If not already completed, the Field Crew will topo the location of the existing ground and features in the area of the impairment footprint for future use in quantities calculations and verification.
- The Field Crew will lay out any additional offsets as instructed by the WA, BPA Project Surveyor, or contractor.
- The Field Crew will take photos of all stakes set and of the general project site. They will include a photo log in the field notes.
- The Survey Party Chief will send survey data to the office prior to leaving the project site or area if connection is available. The Project Surveyor can then verify the staking has been completed correctly.
- Once the Field Crew returns from the field, the Survey Party Chief will import data to TBC and process stakeout reports and export data to a basemap.
- The Project Surveyor will complete an independent quality control check of the stake out points in the base map to confirm the structure was staked properly.
- The Survey Manager will provide QA of all deliverables before they are submitted to BPA.

Potential Equipment/Software

- Fully stocked 4x4 Truck w/ winch and tire chains
- Trimble Static and/or RTK/RTN GPS receivers
- MiFi Hot Spot
- Trimble Data Collector(s) w/ Trimble Access
- Trimble Robotic Total Station w/ reflectorless capability
- Trimble Digital Level (DiNi)
- 2-Way Radios
- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet

Potential Access Rights Needed

- Energized Access
- ProjectWise Access
- TLM Access

Potential Labor Classes

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician

BPA Project Example

- Washougal Grade Stakes

PREPARE STRIP LEGAL DESCRIPTIONS AND NARRATIVES WITH EXHIBITS FROM SURVEY DATA, DEEDS, AND TITLE REPORTS

General Technical Approach

- The Project Surveyor will conduct necessary research to determine any boundary locations required for acquisitions. The Project Surveyor will work with basemap and raw survey data to verify alignments and existing boundary lines and acquisition lines are resolved correctly and reviewed and approved by all parties involved.
- The Project Surveyor will mark-up title reports of affected properties, verify vesting of properties, determine any conflicts, and prepare supplemental documents and exhibits.
- The Project Surveyor will prepare a narrative of the proposed and existing resolved lines and alignments needed to complete the acquisition.
- The Project Surveyor will then work with Drafter/CAD Operator II to confirm that the appropriate Plan Maps, Records of Survey, or Exhibits are prepared for each legal description.
- The Project Surveyor will write the strip descriptions of each tract from the approved alignment, making calls to the controlling lines and monuments using the correct format for the type of acquisition.
- The Project Surveyor will use the BPA Acquisition Manual to confirm that correct formats are being followed.
- The Project Surveyor will check the descriptions against maps, deeds, and surveys, as necessary, and confirm that the drafting of any maps or exhibits matches the written legal description, showing all required and important elements called for in the description.
- The Project Surveyor and Drafter/CAD Operator II will fill out the required and appropriate checklists for all documents, exhibits, and maps.
- An independent Project Surveyor will complete a QC review checklist of supplemental documents, legal descriptions, maps, and exhibits for each legal description for completeness and accuracy.
- The Project Surveyor will track the preparation and submittal of all documents using BPA's Acquisition Tracking Sheet and Drawing Tracking Sheet. The Checker will blue-check the documents and the Author will sign them.
- The Survey Manager will provide QA of all deliverables before they are submitted to BPA.

Potential Equipment/Software

- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet.

Potential Access Rights Needed
- ProjectWise Access
- Logical Access

Potential Labor Classes
- Survey Manager
- Project Surveyor
- Drafter/CAD Operator II

BPA Project Examples
- Albany-Eugene No. 1
- Salem-Albany No. 1
- Salem-Albany No. 2
- Alvey-Fairview No. 1
- Lane-Wendson No. 1
- Marion-Alvey No.1
- Bonanza Butte Radio Station Site Acquisition
- Ferry Butte Radio Site Acquisition
- Thunder Ridge Radio Site Acquisition

UPDATING PLAN AND PROFILE MAPS FROM A BASEMAP DGN FILE

General Technical Approach
- The Project Surveyor and Drafter/CAD Operator II will obtain or produce the survey base map. They will prepare deliverables using BPA-supplied L-Line Report, Crossing Inventory, POT-BM List, PLS-CADD BAK file, and Sag Instructions, and following the guidelines in Sections 3.2.1 and 3.2.2 of BPA's aquisition manual.

Plan Maps
- The Drafter/CAD Operator II will back-check the base map against the structures list, POT-BM list, Crossing Inventory, and L-Line report to confirm that there have been no updates.
- The Project Surveyor will begin cutting individual sheets for each mile.
- The Project Surveyor will add the acquisition ownership information to each sheet.
- The Project Surveyor will use the WA, BPA's Survey Basemap Deliverables Checklist, and Plan Map Checklist to prepare and QC all deliverables.
- The Survey Manager will provide final QA of all deliverables before submitting to BPA.

Profile Maps
- The Drafter/CAD Operator II will restore the PLS-CADD BAK file.
- After the file is restored, the Project Surveyor will back-check the profile against the structures list in PLS-CADD to confirm that they match.
- If they match, the Drafter/CAD Operator II will extract the profile into a dxf format and import it into a MicroStation profile base map, per the BPA manual.
- The Drafter/CAD Operator II will run the BPA-provided Visual Basic Application to add tower numbers, stations, and span lengths.
- If station equations exist, the Drafter/CAD Operator II will update and add them to the stationing in the base map.
- The Drafter/CAD Operator II will add foreign crossings per the crossing inventory to the MicroStation profile base map.
- The Drafter/CAD Operator II will add mile post markers to the profile base map.
- The Drafter/CAD Operator II will position sheet borders into base map to determine sheet layout.
- The Drafter/CAD Operator II will create the individual sheet layouts.
- The Drafter/CAD Operator II will add ruling span from sagging instructions, and tensioning from the structures list to each sheet.
- The Project Surveyor will use the WA, BPA's Survey Basemap Deliverables Checklist, and Profile Map Checklist to prepare and QC all deliverables.
- The Survey Manager will provide final QA of all deliverables before they are submitted to BPA.

Potential Equipment/Software
- Workstations with MicroStation V8i Power InRoads V8i and PLS-CADD installed

Potential Access Rights Needed
- ProjectWise Access
- Logical Access

Potential Labor Classes
- Survey Manager
- Project Surveyor
- Drafter/CAD Operator II

BPA Project Examples
- Salem-Albany No. 1
- Salem-Albany No. 2
- Celilo-Sylmar No. 1
- Lane-Wendson
- Marion-Alvey

ESTABLISHING AND EVALUATING HORIZONTAL AND VERTICAL CONTROL

General Technical Approach
- The Project Surveyor will establish the intent of the control and determine whether it will need to be RTK/RTN, OPUS, OPUS RS, OPUS-Projects Network, or adjusted using TBC Network.
- The Project Surveyor will determine the units, coordinate system, epoch, and vertical datum required.
- The Survey Technician will make sure all required materials for setting control monuments are stocked in each survey truck working on the project.
- The Project Surveyor will create a control plan for each project and review the details with the Field Crew(s).
- The Field Crew will set control monuments in accordance with the BPA control naming conventions, stamp caps appropriately, set a carsonite post near each point, record field notes, and take digital photos of the control and observations. The Field Crew will include swing ties for reference on datasheets.
- The Field Crew will follow the network control plan prepared by the Project Surveyor if network observations are needed.

- If processing control in OPUS, the Field Crew will verify the minimum observation times are met for either OPUS or OPUS-RS requirements. Control in certain locations will require longer observation due to lack of COR Stations in surrounding areas. The Project Surveyor will determine the observation time required for each control point.
- The Field Crew will store and average multiple observations of the same point with different satellite constellations for RTK/RTN.
- For control set conventionally, the Field Crew will run a closed traverse with two sets of angles turned for each observation. The Field Crew will record MTA, Slope or Horizontal Distance, and Vertical Angle in the field notes. The traverse must be closed to two monuments that were controlled by GPS observations.
- The Field Crew will run a closed digital level loop through the project control for future adjustments if leveled elevations are required. The Field Crew will use a known benchmark, footing, or hold one of the established GPS elevations as a basis of elevations.
- The Survey Party Chief will complete all required field notes on the correct BPA field note forms.
- The Survey Party Chief will download and process all data with the appropriate software for the type of control procedures being used for the project, and the Project Surveyor will adjust as necessary.
- If using OPUS or OPUS-RS, the Project Surveyor will verify the accuracy of the results. The Project Surveyor will confirm that the results are in the correct coordinate system, epoch, and vertical datum, and then post the results to the project folder.
- The Project Surveyor will adjust all raw data using OPUS Projects or TBC for GPS network adjusted or traverse adjusted control. The Project Surveyor will run the unconstrained adjustment to verify network integrity and run the minimally constrained adjustment for fixed control coordinate comparisons. The Project Surveyor will complete the Fully-constrained Horizontal and Vertical network adjustments, including any leveled elevations for final control results. The Project Surveyor will verify that the results meet the desired accuracy standards and then save all reports to the project files.
- The Project Surveyor will run the point derivation report and post it to the project folder for RTK/RTN control.
- An independent Project Surveyor will QC the final control coordinates reports and statistical values to confirm the desired accuracy standards and requirements of the project are being met.
- The Survey Manager will provide final QA prior to submittal to BPA.

Potential Equipment/Software

- Fully stocked 4x4 Truck w/ winch and tire chains
- Trimble Static and/or RTK/RTN GPS receivers
- MiFi Hot Spot
- Trimble Data Collector(s) w/ Trimble Access
- Trimble Robotic Total Station w/ reflectorless capability
- Trimble Digital Level (DiNi)
- 2-Way Radios
- Digital Camera
- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet

Potential Access Rights Needed

- Energized Access
- ProjectWise Access
- TLM Access

Potential Labor Classes

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician

BPA Project Examples

- Olympia Region LiDAR Survey Support
- Spokane Area LiDAR Support
- FY12 & FY13 RADIO Inventory Project
- Salem-Albany No. 1
- Monroe-Maple Valley Retracement

EFFECTIVELY INTEGRATE NEW, UNDER-EXPERIENCED, AND UNDER-TRAINED EMPLOYEES INTO BILLABLE ROLES

General Technical Approach

- We will provide opportunities for under-experienced/ under-trained employees and subconsultants to work with experienced staff at all levels and provide support to make them successful.
- We will send them to the appropriate training courses needed to perform their job effectively.
- We will answer their questions and provide them with the information they need to make informed decisions. We will guide them through each step of BPA processes providing the context and reasons behind each task.
- We will show under-experienced/under-trained employees how to perform tasks they will ultimately be responsible for. We will provide examples of the correct way to perform the tasks, set realistic expectations, and allow the staff to do the tasks. We will provide constructive criticism and allow them to correct their mistakes.
- We will allow adequate time for the individual to accomplish the task on their own with proper guidance from experienced staff members.
- We will regularly check-in with them regarding their progress on the assigned tasks and perform interim QA/ QC on their work.

Potential Equipment/Software

- Fully stocked 4x4 Truck w/ winch and tire chains
- Trimble Static and/or RTK/RTN GPS receivers
- MiFi Hot Spot
- Trimble Data Collector(s) w/ Trimble Access
- Trimble Robotic Total Station w/ reflectorless capability
- Trimble Digital Level (DiNi)
- 2-Way Radios
- Digital Camera
- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet.

Potential Labor Classes

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician
- Drafter/CAD Operator II

BPA Project Examples

- Mylar Scanning & Hybridization
- Salem-Albany No. 1 New Plan & Profile Maps

PREPARE FIELD NOTES IN SUPPORT OF DIGITAL DATA COLLECTION

General Technical Approach

- The Survey Party Chief will complete the required field notes on the applicable BPA forms.
- The Project Surveyor will red-check the field notes against the raw data and photos and then sign the notes.
- The Survey Party Chief or Survey Technician will prepare the CFNI Index of the field notes.
- An independent Project Surveyor will provide QC of the field notes and the CFNI by blue-checking the CFNI report.
- The Survey Manager will provide QA of field notes and CFNI prior to submittal to BPA.

Potential Equipment/Software

- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet
- Trimble Data Collector(s) w/ Trimble Access
- Google Earth w/ Earthpoint PLSS software

Potential Access Rights Needed

- ProjectWise Access

Potential Labor Classes

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician

BPA Project Examples

- FY13 and FY14 Photo ID Surveys
- Encroachment survey field support
- Macks Inn Substation Radio Site and Beam Path Profile
- Reedsport SS Record of Survey



Raw data of a radio site inventory in central Idaho.

PROCESS FIELD DATA

General Technical Approach

- On Baseline Modernization projects, the Survey Party Chief will download field ties to existing baseline monuments and footings and import that data into TBC and MicroStation and analyze the data to retrace the baselines.
- Prior to leaving the field, the Survey Party Chief will download field data into TBC and review the field data to verify all data specified in the WA has been completed.
- The Survey Party Chief or Project Surveyor will import all the raw data into TBC upon completion of the field work.
- The Project Surveyor will review all the raw data compared to the field notes and verify that the data is correct and in the proper coordinate system, units, and vertical datum for the project. The Project Surveyor will make any adjustments needed to the raw data.
- The Survey Party Chief will export the data from TBC in the required format for processing the deliverable.
- The Survey Party Chief or Survey Technician will import the field data into Bentley Power InRoads V8i and process the raw data to a survey basemap, which will be given to the Drafter/ CAD Operator II for final drafting of the mapping products as required.
- The Project Surveyor will oversee the development of the mapping products using the WA.
- An independent Project Surveyor will QC the deliverables using the WA and the appropriate BPA checklist(s).
- The Survey Manager will provide final QA of all deliverables prior to submittal to BPA.

Potential Equipment/Software

- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i installed and capable of remote access to OBEC's servers and the internet.
- Trimble Static and/or RTK/RTN GPS receivers
- Trimble Data Collector(s) w/ Trimble Access
- Digital Camera

Potential Access Rights Needed

- ProjectWise

Potential Labor Classes

- Project Surveyor
- Survey Party Chief
- Drafter/CAD Operator II

BPA Project Examples

- Olympia Region LiDAR Survey Support
- Spokane Area LiDAR Support
- FY14 & FY15 Baseline Modernization
- Ostrander Stormwater Drainage Topo
- FY12, FY13 & FY14 RADIO Inventory
- Encroachment Survey Field Support

FIELD VERIFY AIRBORNE LIDAR DATA HORIZONTALLY AND VERTICALLY ALONG A 25-MILE PORTION OF TRANSMISSION CORRIDOR

General Technical Approach

- The Project Surveyor will determine whether the control points will need to be RTK/RTN, OPUS, OPUS RS, OPUS-Projects Network, or an adjusted TBC Network.
- The Project Surveyor will determine the units, coordinate system, epoch, and vertical datum based on the WA and line location.
- The Project Surveyor will create a control plan for the project and review the details with the Field Crew. They will select suitable check locations and towers for the LiDAR field verifications with a minimal number of checks at each end of the span and one near the middle. More checks may be required as determined by the BPA Project Surveyor or the WA.
- The Survey Technician will confirm that all required materials for setting control monuments are stocked in each survey truck working on the project.
- The Survey Party Chief will recover existing control or set control monuments in accordance with the BPA control naming conventions, stamp caps appropriately, set a carsonite post near each point, and record field notes and digital photos of the control and observations. The Survey Party Chief will include swing ties for reference on datasheets.
- The Survey Party Chief will make sure all control monuments are set on BPA property or within the BPA transmission line corridor.
- Concrete monuments with BPA caps should be set at any substation where LiDAR verification is needed. If a previous LiDAR monument exists, the Survey Party Chief will determine whether it needs to be re-observed and can be used for the LiDAR verifications performed for the project.
- The Field Crew will perform GPS observations on the control points at each check location in accordance with the control plan and the WA.
- From the established control at each planned check location, the Field Crew will use a Trimble direct reflectorless total station to observe a minimum of six locations on each structure being verified; preferred locations on the structures are cross beams, jumpers, and points of conductor attachments.
- The Field Crew will observe a minimum of two ground observations in the general area of the structures, preferably on open terrain or an impervious surface.
- The Field Crew will swap instrument occupation points and perform checks shots of at least three verification shots on each structure being checked.
- The Field Crew will take digital photos of all sides of the structures being verified and the general area.
- The Survey Party Chief will complete field notes and photo log for all control and LiDAR verifications.
- The Survey Party Chief will download raw data and process baselines in TBC to verify the GPS data is accurate prior to leaving the project area.
- The Survey Party Chief or Project Surveyor will download, process, and/or adjust all data with the appropriate software for the type of control procedures being used per the WA control plan.
- The Project Surveyor will review all the raw data compared with the field notes and verify that the data is correct and in the proper coordinate system, units, and vertical datum for the project. The Project Surveyor will make any adjustments needed to the raw data.
- The Project Surveyor and Survey Party Chief will produce Geodetic Control Datasheets as required, Geodetic Control Reports, points listings, PLS-CADD listings, point derivation reports for check shots and control, CFNI Index and field notes, digital photos and LiDAR Control & Check Reports in accordance with the WA for all LiDAR verification check locations.
- An independent Project Surveyor will provide QC of all deliverables.
- The Survey Manager will provide final QA of all deliverables prior to submittal.

Potential Equipment/Software

- Fully stocked 4x4 Truck w/ winch and tire chains.
- Trimble Static and/or RTK/RTN GPS receivers
- MiFi Hot Spot
- Trimble Data Collector(s) w/ Trimble Access
- Trimble Robotic Total Station w/ reflectorless capability
- Trimble Digital Level (DiNi)
- 2-Way Radios.
- Digital Camera
- Workstations/Laptops with Trimble Business Center (TBC), MicroStation V8i, Power InRoads V8i and MARS software installed and capable of remote access to OBEC's servers and the internet.

Potential Access Rights Needed

- Energized Access.
- ProjectWise Access
- TLM Access

Potential Labor Classes

- Survey Manager
- Project Surveyor
- Survey Party Chief
- Survey Technician

BPA Project Examples

- FY11 LiDAR Support
- FY12 LiDAR Support
- FY13 LiDAR Support
- Spokane Area LiDAR Support
- Olympia Region LiDAR Support



LiDAR verification survey at the Kitsap Substation.

3. ▪ Equipment

See attached Technical Proposal Excel Workbook worksheet, "Equipment" for a complete list of our team's equipment, including brands and model numbers.

4. ▪ Location/Geographical Areas

ABILITY TO EFFECTIVELY AND EFFICIENTLY SUPPORT SURVEYING AND MAPPING TASKS ANYWHERE WITHIN BPA'S SERVICE AREA

Over the past six years, OBEC has demonstrated that we can support BPA's surveying and mapping tasks anywhere within BPA's service area. We have responded to work assignments from northern Washington to California, to western Montana and Wyoming, and northern Utah.

OBEC surveyors once responded to a WA that required accurate elevations on BPA radio towers for FAA permits. With an aggressive schedule, OBEC surveyed more than 80 radio towers in an area spanning from the Oregon Coast to Idaho Falls, Idaho, and from the Salmon River Mountains, to the Klamath Mountains. OBEC was able to perform work in a large area effectively and efficiently by creating standardized workflows and a set of template files. Working with BPA staff, OBEC tested, adjusted, and rolled out the workflows and templates, and helped provide training to BPA and consultant staff involved in the project.

OBEC's survey staff also responded to WAs for LiDAR verifications that had aggressive schedules. The projects covered many BPA corridors in several states, which required multiple crews working simultaneously in remote and rugged areas. OBEC had crews from three offices working on these assignments. OBEC has completed several WAs for survey crew support for encroachment surveys where we were able to field a crew on short notice, including once within 24 hours of receiving the WA.

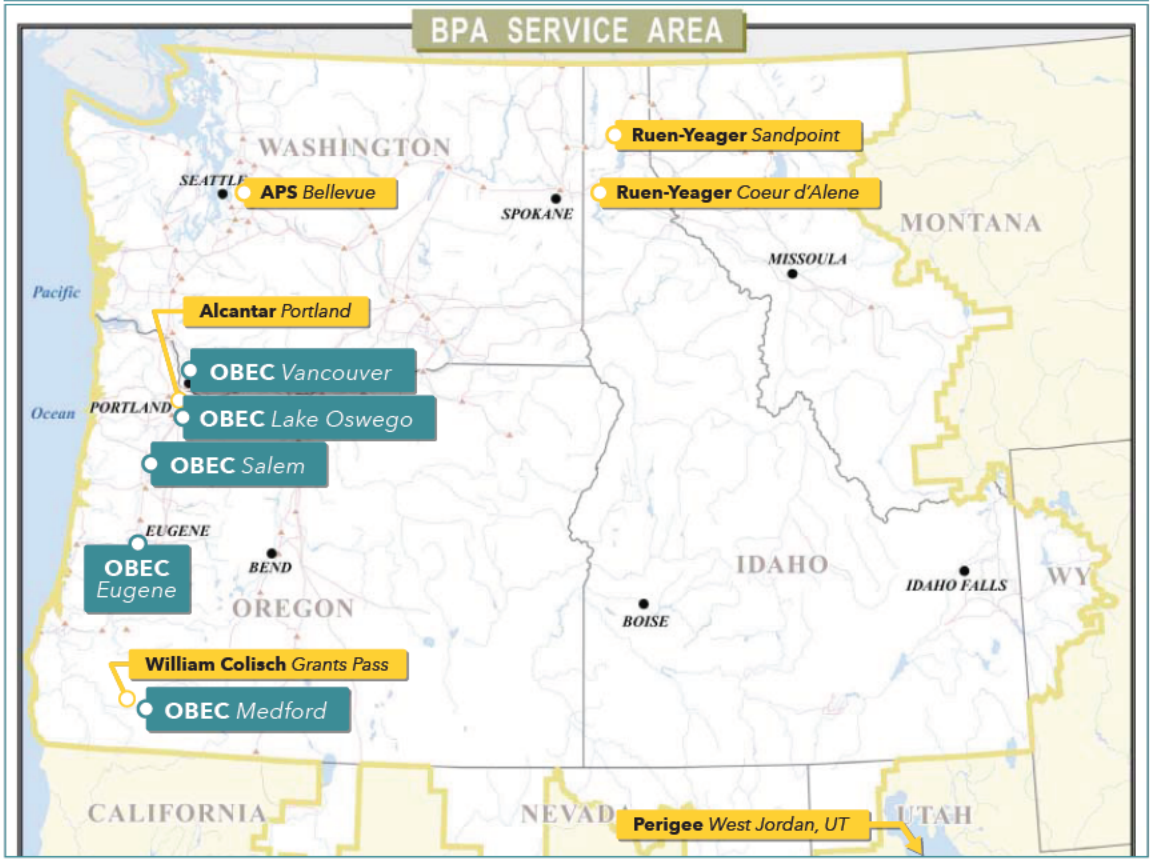
OBEC staff have the necessary capacity and equipment to respond quickly to WAs requiring special access. We have completed baseline mordernization surveys at many BPA substations throughout Oregon and Washington that required staff with non-electrical energized access on short notice.

For this contract, OBEC has carefully selected experienced teaming partners located throughout BPA's Service Area. ***Figure 4*** below shows the locations of our team's offices. Our teaming partners can provide staff, equipment, or expertise on short notice, as needed, to supplement OBEC crews to provide cost-effective services throughout the BPA service area.

REGIONAL OFFICES THAT COULD BE USED TO MINIMIZE REIMBURSABLE TRAVEL EXPENSES

Please see the attached Technical Proposal Workbook worksheet entitled "Locations" for all survey and mapping support personnel that permanently reside at each of our offices.

Figure 4. Office Locations Map



5. ▪ Safety



Tower leg ties for an access road survey and plan map update.



LiDAR verification survey along the Columbia River Gorge.

OBEC maintains a Corporate Workplace Health and Safety Program that all employees and subcontractors must follow. The program addresses the general requirements for every project/employee as well as the BPA section for: **Safety And Health – Non-Electrical Contractor(s) (15-55).** All OBEC team members, including subcontractors, will receive copies of this program and will follow it in support of this contract. Each OBEC office has a survey crew member who serves as a Safety Manager. The designated Safety Managers are shown in the Organization Chart on page 2.

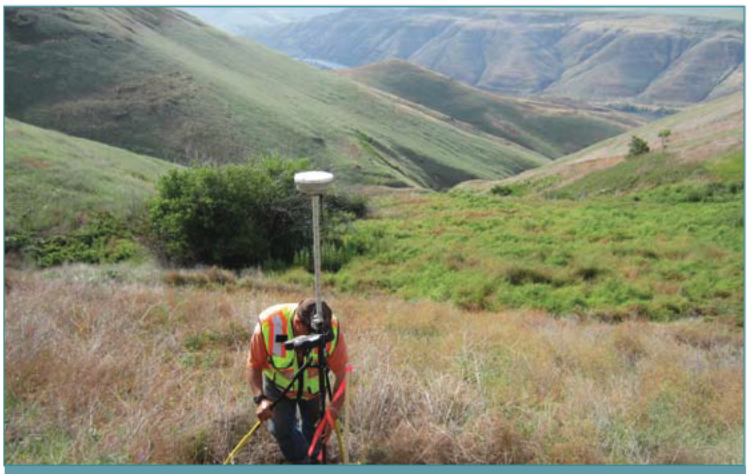
All OBEC employees and subcontractors will be briefed on access and safety requirements as appropriate to their project assignments. This will include a general briefing and any site-specific hazard identification and briefings that may be necessary prior to any OBEC or subcontractor staff visiting the project site.

All OBEC employees and subcontractors visiting or working on project sites shall have, at minimum, the following personal protective equipment (PPE):

- ANSI-rated hard hat (worn as instructed in the manufacturer's specifications)
- ANSI-rated safety glasses or goggles with side shields or over-the-glasses ANSI-rated safety eyewear
- ANSI-rated hearing protection (when needed)
- ANSI-rated high visibility reflective vests/jackets - Class 2 or Class 3 (night)
- Sturdy leather work boots
- Full-length trousers and shirts with a minimum of 4-inch sleeves
- All vehicles will be stocked with the following:
  - Safety/first-aid kits
  - Snake/bug bites kit
  - Jumper cables
  - Personal Flotation Devices (PFDs)
  - Tire chains
  - Flares
  - Flashlights
  - Fire extinguisher
- Four-wheel-drive vehicles with winches and traction tires or devices (studded tires and chains)
- Fall protection devices
- Confined space identification, measures, and precautions
- Protective Kevlar chaps for chainsaw use
- Work gloves
- Fire prevention methods and tools:
  - Fire extinguishers/water cans
  - Shovels and ground tools
- Remote project location considerations:
  - Check-in schedule
  - Buddy system
  - Local area contacts
- Personnel requiring Energized Access will be equipped with the following:
  - Carbon fiber rods, cloth/wooden tapes
  - Unescorted Non-Electrical Energized Access Permit
  - Rules of Conduct Handbook
  - Accident Prevention Manual (APM)
  - Lace-up, over-the-ankle boots meeting ASTM F 2413, Class 75 with EH rating



OBEC monitors the weather and takes appropriate precautions.



Cadastral work for a boundary location at a substation.

Specialized Considerations

In addition to the minimum general safety considerations, we will take measures to keep the workplace safe for staff and crew members. Additional project safety considerations depend on the statement of work and job specifics. These considerations may include, but are not limited to the following:

Various Weather Condition Considerations

OBEC will monitor the weather and take precautions to prevent hypothermia or heat stroke. We will also consider the weather's impact on driving conditions, as well as possible fire danger.

Energized Access Details

OBEC currently has three staff members with the Unescorted, Non-electrical energized access **credential** and we keep all required training and testing current to maintain our un-escorted energized access for BPA projects. Safety is the number one concern for any project, but with accessing energized facilities, the safety requirements are even higher. It is important that the members of the crew understand and follow the current BPA Rules of Conduct Handbook and Accident Prevention Manual (APM). We will keep current versions of these documents in each vehicle used for BPA projects, as well as a list of contacts and an emergency plan in case of an incident. We follow a walk through, site/hazard ID evaluation protocol and discuss all hazards with crew members on site each time we enter an energized facility.

Training and Cerifications

OBEC requires and provides training for all staff working in the field to obtain and keep current, at a minimum, the following certifications and trainings:

- CPR and first aid
- Fall protection
- Traffic control technician
- Confined space

Incident Reporting

OBEC Employee Accident Reports are **mandatory** and are to be completed by the injured person(s) for any on-the-job injuries, illnesses, or accidents. This form must be completed and returned to the individual's manager as soon as possible and no later than 24 hours after the incident.

All BPA-project-related Safety Incidents shall be promptly reported by involved employees to their immediate supervisor, who will notify the appropriate BPA staff. The supervisor and employee will complete the **Contractor's Report of Incident / Near-Miss Report**. Accidents involving personal injury, illness, or property damage require filing **BPA F 6410.15e (Contractor's Report of Personal Injury, Illness, or Property Damage**).

Safety Record

To-date, OBEC has had zero injury accidents on BPA projects, thanks in part to our firm-wide dedication to safety and the procedures implemented for each one of your projects. OBEC will continue to provide project-specific safety-related training and support to all staff. Over the last six years, OBEC has performed a multitude of BPA projects across your service area without a single reported personal injury incident. We take safety very seriously on all of our job sites and in all of our offices. Project-specific safety meetings and monthly safety meetings at a corporate level with a designated safety committee member provide opportunities to share lessons learned and update best practices for keeping our staff and teaming partners safe.

6. ▪ Quality Assurance/Quality Control

OBEC has a comprehensive Quality Management Program that we use on all projects. We have modified our Survey QA/QC Program document to specifically address BPA's workflows and deliverables for your projects (***Figure 5***).

On past BPA projects, OBEC's Survey Manager has received the WA prior to Notice to Proceed and prepared a budget and often a schedule. The Survey Manager prepared a market-competitive budget based on past experience with similar projects, BPA standards, and specifics of the WA. The Survey Manager submitted the budget to BPA for review, and worked with BPA to address any concerns regarding the budget, and submit a revised budget.

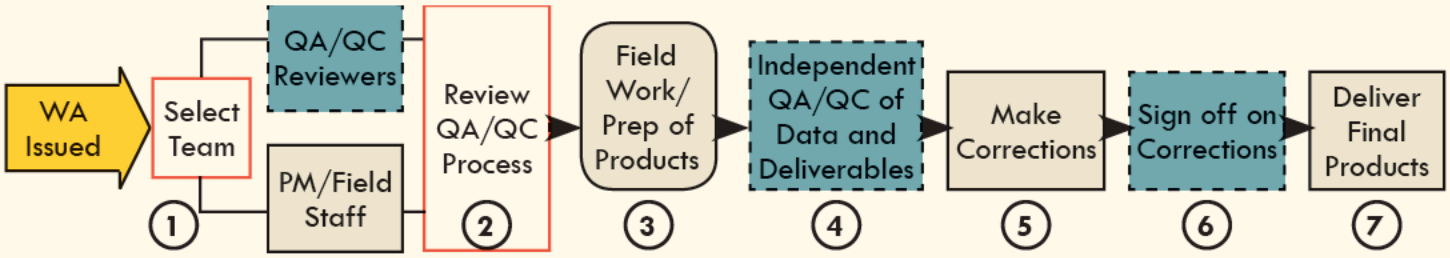
OBEC begins QA/QC as soon as we receive a WA, and we thoroughly prepare the assigned team prior to sending them into the field. We conduct an internal kick-off meeting to review the WA, roles and responsibilities, project schedule, project budget, and safety concerns. This process allows our teams to work safer and more efficiently to complete all survey tasks in the field and in the office.

OBEC's QA/QC program addresses incorporating new, under-trained and untrained employees into the workflow. Our experienced staff trains and mentors these employees and closely monitors their progress to develop their skills.

OBEC's Project Surveyor assigned to a WA will communicate daily with field and office staff to monitor progress on all tasks. This daily communication allows us to modify staff to meet delivery dates or other project milestones. The Project Surveyor also tracks budgets on a weekly basis using our Deltek Vision accounting software. We report progress to BPA using the Weekly Status Report template, which tracks budget, task progress, and any issues that may affect budget and schedule. Our Project Surveyor and Survey Manager will coordinate with BPA staff to discuss any issues that may impact budget or schedule and resolve those issues quickly.

OBEC will provide a thorough quality control check (QC) and quality assurance review (QA) of all work products followed by a final QA of those deliverables before uploading and submitting to BPA. Three of our Project Surveyors are highly experienced in providing QC on a full spectrum of BPA deliverables. These key staff members will be responsible for QC of all BPA deliverables using the WA, BPA checklists, and OBEC's Survey QA/QC program document. After the Project Surveyor completes QC, the Survey Manager will provide a final QA of all deliverables before the Project Surveyor submits them to BPA.

Figure 5. OBEC's QA/QC Steps, Modified for BPA's Workflows and Deliverables



(1) Survey Manager will select the field and QA/QC team based on:
- Experience doing similar work
- Possession of required BPA clearances for the project
- Availability and capacity
- Project location
- BPA staffing requests
- QA/QC experience and availability

(2) Survey Manager will review with the team the QA/QC process for field and in-office work, per OBEC's Survey QA/QC Program Operations document and the requirements of the WA. This includes review of:
- Existing BPA-supplied data or other data necessary for the project
- Project specifics, expectations, lines of communication, deliverables, delivery schedule, and project milestones
- Site-specific safety requirements
- Daily crew communication requirements
- Emergency contacts, such as BPA's COTR or Project Surveyor and OBEC's Project Surveyor or Survey Manager
- Download of BPA's current feature code library to all data collectors
- Safety equipment and gear requirements

(3) In the field, crews will:
- Conduct an assessment of site hazards, per OBEC's Health and Safety Plan, and wear safety equipment and gear
- Conduct an onsite Job Briefing as needed for energized areas, in accordance with section J-1 of BPA's Accident Prevention Manual
- Communicate daily progress with OBEC's Project Surveyor
- Integrate a Survey Party Chief with Energized Access, as required for substations, energized areas of substations, and radio sites

At the office, data will be prepared for deliverables.

(4) Designated QA/QC staff member will review the data and products, make recommendations for corrections, and return the materials to the appropriate survey team member (field crew, technician, project surveyor, survey manager, etc.) for corrections.

(5) Appropriate survey staff will make the corrections required by the QA/QC review.

(6) The QA/QC staff member will verify that the corrections were made, and will sign off on the final documents as part of OBEC's document control log.

(7) OBEC will deliver the final documents to BPA in the manner required by the project (electronically or hard copies).

QC Plan for Specific Tasks

Figure 6 below highlights the unique safety issues and QC steps that OBEC would take for each of the nine tasks identified in the RFO. We have also included relevant project examples from our previous experience with BPA.

Figure 6. QC Plan for Specific Tasks

TASK	UNIQUE QC STEPS	UNIQUE SAFETY ISSUES	PROJECT EXAMPLES
1. STATIC RTK, RTN, & DIFFERENTIAL GPS	▪ **Verify Required Coordinate System, units, epoch, and Vertical Datum requested for the project.** ▪ **Implement proper planning and field procedures to verify redundancy for quality control and data analysis.** ▪ Consider satellite availability, multi-path, possible obstructions and best GPS methods required for each point to meet the required accuracy standards. ▪ **Review the observations and generate reports for final QC of the data.**	▪ Energized facilities ▪ Site hazards ▪ Overhead and underground utilities ▪ Fire hazards	▪ Chehalis-Centralia No. 2 ▪ Albany-Eugene No. 1 Rebuild ▪ Maupin Substation ▪ Salem-Albany No. 1 Rebuild ▪ Celilo-Sylmar No. 1 Line Upgrade
2. STAKING STRUCTURES FOR CONSTRUCTION	▪ Understand the staking request and needs of the contractor. ▪ Coordinate with the field crew and review all items required to meet the client or contractor's request. ▪ Project Surveyor performs QC of calculations and reports while the crew is in the field. ▪ Verify on-site control used for staking. Use field procedures to create redundancy for verification of positions for reporting as-staked positions. ▪ Take photos of all staked positions for documentation. ▪ Review the Work Assignment to confirm all required staking is completed prior to leaving the site. ▪ Discuss with field crew any changes or modifications of calculation required in the field. ▪ QC field notes and staking reports against photos to confirm that information written on the stake in the field is correct.	▪ Energized facilities ▪ Site hazards ▪ Overhead and underground utilities ▪ Heavy construction equipment ▪ Fire hazards	▪ Keeler-Tillamook No. 1 Re-termination ▪ Chehalis-Centralia No. 2 ▪ Albany-Eugene No. 1 Rebuild ▪ Maupin Substation ▪ Reedsport-Fairview No. 1 Structure Staking ▪ FY13, FY14 and FY15 Surveying Crew Support
3. EARTHWORK STAKING	▪ Understand the staking request and needs of the contractor. ▪ Coordinate with the field crew and review all items required to meet the client or contractor's request. ▪ Project Surveyor performs QC of calculations and reports while the crew is in the field. ▪ Verify on-site control used for staking. ▪ Use field procedures to create redundancy for verification of positions for reporting as-staked positions. ▪ Take photos of all staked positions for documentation. ▪ Review the Work Assignment to confirm all required staking is completed prior to leaving the site. ▪ Discuss with field crew any changes or modifications of calculation required in the field. ▪ QC field notes and staking reports against photos to confirm that information written on the stake in the field is correct.	▪ Energized facilities ▪ Site hazards ▪ Overhead and underground utilities ▪ Heavy construction equipment ▪ Excavation safety ▪ Fire hazards	▪ Harney Substation/ Radio Site Construction ▪ Washougal Grade Stakes

TASK	UNIQUE QC STEPS	UNIQUE SAFETY ISSUES	PROJECT EXAMPLES
4. TOPOGRAPHIC SURVEYING	▪ Review research to verify all required information needed for control and mapping of the site. ▪ Consider PEPs or right-of-entry requirements. Contact landowners as required by law. ▪ Review field procedures for control points and topographic limits and access requirements with the field crew prior to leaving for the site. Verify control used or set and the topographic data collected are in accordance with the tasks assigned in the WA. ▪ Coordinate with Field Crew to address any questions or needs. ▪ Once data collection is complete, review the data to verify the limits and requirement are met before the crew leaves the site. ▪ Project Surveyor and Survey Party Chief will review the processed data, field notes, and basemap for completeness and accuracy. ▪ Generate and review backsight and/or GPS control point check shot reports and derivation reports for data integrity. ▪ Review drafting requirements with the Drafter/ CAD Operator II and check in regularly to confirm the appropriate information is included on the map.	▪ **Energized facilities** ▪ **Overhead and underground utilities** ▪ **Site hazards** ▪ **Fire hazards** ▪ **Power tool safety**	▪ Harney Substation Topographic Survey ▪ Paul Substation Topographic Survey ▪ Chief Joseph Substation Topographic Survey ▪ Custer Substation Topographic Survey ▪ Ross Complex Pedestrian Crossing ▪ Sappho Substation Baseline and Topographic Survey ▪ Alvey Substation Topographic Survey
5. BOUNDARY SURVEYING	▪ Research and review all required records with federal, state, and local agencies. ▪ Review any controlling monuments, potential encroachments, and topographic features required with the field crew prior to the site visit. ▪ Consider PEPs or right-of-entry requirements. Contact landowners as need. ▪ Communicate with crew in the field and provide on-the-fly calculations for monument search locations to limit the number of site visits. ▪ Generate and review backsight and/or GPS control point check shot reports and derivation reports for data integrity. ▪ Compare record against measured observations and determine the boundary lines with all available evidence. ▪ Review the determinations with an independent Surveyor to verify accuracy and completeness. ▪ Prepare accurate supplemental documentation of all records used for boundary determinations and write a detailed narrative of the results for QA/QC reviewers.	▪ Energized facilities ▪ Overhead and underground utilities ▪ Site hazards ▪ Fire hazards	▪ Walla Walla Substation Record of Survey ▪ Two-Mile Substation Record of Survey ▪ Pearl-Keeler No. 1 Record of Survey ▪ Reedsport Substation Record of Survey ▪ Harrisburg Substation Record of Survey ▪ Chemawa Substation Record of Survey ▪ Thunder Ridge Radio Site Record of Survey
6. LEGAL DESCRIPTIONS	▪ Verify field work is complete and accurate. ▪ Check Basemap and title reports to confirm legal descriptions are written from the correct data sources and line work. ▪ For complicated situations, review the problem with the team and consult BPA staff for ideas, standards, and experience on previous projects. ▪ Prepare an accurate narrative of resolutions. ▪ Provide materials used to write the legal description as supplemental documents to aid the QC review of the final legal description. ▪ QA deliverables to verify that the work follows the BPA Acquisition Manual guidelines and TERM Drafting Bulletins. Confirm that the work is formatted correctly and includes the correct forms before delivery to TERM Customer Service.	▪ N/A	▪ Albany-Eugene No. 1 ▪ Salem-Albany No. 1 ▪ Salem-Albany No. 2 ▪ Alvey-Fairview No. 1 ▪ Lane-Wendson No. 1 ▪ Marion-Alvey No.1 ▪ Bonanza Butte Radio Station Site Acquisition ▪ Ferry Butte Radio Site Acquisition ▪ Thunder Ridge Radio Site Acquisition

TASK	UNIQUE QC STEPS	UNIQUE SAFETY ISSUES	PROJECT EXAMPLES
7. PLAN & PROFILE MAPS	▪ Use the approved base map. ▪ Review the required sections of the BPA Acquisition Manual for Plan and Profile Maps. ▪ Project Surveyor will compile all supplemental information used to complete the map. ▪ Project Surveyor will check in regularly with CAD operators to verify the appropriate information is included on the maps. ▪ Back check the maps against the supplemental information provided for the creation of the map. Examples include structure lists, crossing inventories, POT-BM lists, ownerships, monument locations, coordinate lists, and L-Line reports. ▪ Project Surveyor and Drafter/CAD Operator II will complete the required Plan or Profile Map checklist for each map generated and a QC checker will review the maps and complete the checklist using the supplemental information provided. ▪ QA deliverables to verify that the work follows the BPA Acquisition Manual guidelines and TERM Drafting Bulletins. Confirm that the work is formatted correctly and includes the correct forms before delivery to customer service group.	▪ N/A	▪ Lane-Wendson No. 1 Plan and Profile Support ▪ Thunder Ridge Radio Site Acquisition ▪ Ferry Butte Radio Site Acquisition ▪ Celilo-Sylmar No. 1 Line Upgrade ▪ Salem-Albany No. 1 Rebuild ▪ Salem-Albany No. 2 Rebuild ▪ Bonanza Butte Radio Site Acquisition
8. HORIZONTAL & VERTICAL CONTROL POINTS	▪ Verify the required units, coordinate system, epoch, and vertical datum required for the project. ▪ Implement proper planning and field procedures for the type of control being established with the appropriate level of accuracy and redundancy for quality control and data analysis. ▪ Follow point naming conventions for the type of control point being established. ▪ Review the observations and generate the required reports for final QC of the resultant observations and coordinate values.	▪ Energized facilities ▪ Overhead and underground utilities ▪ Site hazards ▪ Fire hazards ▪ Power tool safety	▪ Olympia Region LiDAR Survey Support ▪ Spokane Area LiDAR Support ▪ FY12 & FY13 RADIO Inventory Project ▪ Salem-Albany No. 1 ▪ Monroe-Maple Valley Retracement
9. PROGRESS REPORTS	▪ Accurate budget reports for the reporting period ▪ Confirm delivery dates and contract expiration dates are correctly indicated. ▪ Properly estimate the percentage complete based on work remaining, not dollars spent. ▪ Make sure reports address all tasks of the work assignment with the allocated dollar amounts for each task. ▪ Properly report any circumstance placing the deliverables, schedule, or budget in jeopardy with the COTR.	▪ N/A	▪ Lane-Wendson No. 1 ▪ Reedsport Substation Record ▪ Salem-Albany No. 1 ▪ FY15 Baseline Modernization Surveys ▪ Fish & Wildlife "A" Tracts GIS Support ▪ Monroe-Maple Valley ROW Recovery

7. ▪ Past Performance

Below are three recent client references that will attest to the quality of our survey work.

Company Name: Bonneville Power Administration
Contact Name: TERM/Survey
Project Name: Communication Facilities Radio Inventory Project
Project Synopsis: As part of a team that included BPA staff and two additional Master Contractors, OBEC helped inventory communications system infrastructure across the entire BPA Service Area. The project involved collecting massive amounts of data by multiple parties, and the data had to meet the needs of multiple groups within BPA, including the Surveying/Mapping and Telecomm groups. The data collected by all parties had to be consistent, seamless, and well-coordinated to avoid sending multiple groups of people to each communication site – many of which are located in remote locations at high elevations. Additionally, the communication sites featured a wide variety of communications equipment that contractors and BPA staff had to become familiar with to accurately identify, inventory, and survey.

To meet these objectives, OBEC helped BPA create standardized workflows and template files. OBEC and BPA selected a few radio sites to test and modify the templates and workflows. OBEC helped BPA generate a final standardized feature code library that captured the required data attributes to meet the information needs of BPA's Survey/Mapping and Telecomm groups. OBEC helped BPA roll out the workflows, templates, and feature code libraries to all parties and helped train key BPA staff and contractors on the workflows, standards, and key telecomm equipment being inventoried.

The BPA/consultant team covered the radio sites based on geographic area to reduce costs and maximize efficiency. The team set control and collected the required data at each of the sites. OBEC helped process the data and provide BPA with consistent sets of deliverables for each site surveyed.

The team completed 3D inventories of all the towers and equipment in just two summers. The datasets and deliverables were consistent across all contractor and BPA staff involved, and both the Surveying/Mapping and Telecomm groups have reliable datasets with spatially accurate and attributed information.

Company Name: Bonneville Power Administration
Contact Name: TERM/Survey
Project Name: Pearl-Keeler No. 1 Record of Survey
Project Synopsis: OBEC performed a retracement for BPA on this 13-mile-long portion of transmission line from Sherwood to Hillsboro, Oregon. The retracement resolved the location of the survey line and retraced the boundaries of the transmission line easement. OBEC retraced an original BPA survey from 1956, and we needed to recover evidence that pointed back to locations in the original survey.

The retracement depended primarily on two types of evidence: existing BPA towers and cadastral monumentation. OBEC began by tying the BPA towers, shooting each tower leg, and finding the original BPA monuments at the angle points of the tangents. The points were not directly accessible with GPS because they were under high-voltage power lines, and we had to set a pair of control points to tie to each tower. We took photos of each tower and compared the tower type found in the field to the tower in record documents to verify that they matched.

We conducted survey research for each of the cadastral monuments shown on the 1956 plan maps and searched for every monument. We examined the history of each monument we found to verify that it had a solid history back to 1956. We then examined each tangent of the survey line in relation to adjacent monuments, using record of survey information fitted to PLSS monuments. Because the survey history of many of the PLSS monuments was insufficient, inverses to the towers from the calculated angle points did not fit well.

We then calculated the survey angle points using the record engineered offsets from BPA drawings, as directed by BPA, and these calculated angle points fit well with found BPA monuments at the angle points. We noted inverses to PLSS corners on the survey.

Once BPA staff reviewed and approved the alignment, OBEC monumented the survey line at BPA-specified intervals and posted portions of the right-of-way. OBEC provided BPA a full set of deliverables including field notes, photos, maps, and CAD files, and we filed a record of survey with the Washington County Surveyor's Office.



Radio site inventory at Odell Butte, Oregon.



Pearl-Keeler Tower 17.

Company Name: Eugene Water & Electricity Board (EWEB)
Contact Name: Bob Hines
Email: bob.hines@eweb.org
Phone Number: 541.685.7156
Project Name: EWEB Headquarters Development Project
Project Synopsis: EWEB relocated their headquarters and plans to sell a portion of their 17-acre riverfront property in downtown Eugene for development. The property consists of multiple tax lots, which still have a substation and their corporate headquarters. EWEB needs to rearrange their lot lines to sell their surplus real estate. They also have numerous above- and below-ground utilities across the site, which need to be located and protected. OBEC surveyors determined the existing boundaries of each of the tax lots. To do this, they located all monuments of record and created and filed a record of survey with the County Surveyor's office.

OBEC proved that these were legal lots and adjusted to accommodate EWEB's needs through the City of Eugene's planning department. OBEC protected EWEB's utility assets by surveying above-ground utilities and locating below-ground utilities through EWEB's as-built data and a series of pothole excavations to physically located the pipes and conduits. After OBEC located the utilities, we met with EWEB to determine which utilities to keep and the widths needed to maintain their utilities. We prepared legal descriptions and exhibits for each utility line to accompany easement documents to protect each of EWEB's assets. The property line adjustments are ongoing, and we are currently in discussions with EWEB and the City to determine which property lines should be moved to get the desired reconfiguration. Due to OBEC's efforts, EWEB now has a record of survey showing their boundaries and a series of legal descriptions and exhibits to protect their assets when the surplus property is sold. In the near future, they will have a plan to adjust their boundary lines to fit their surplus property.

8. ▪ Subcontracting Plan

OBEC has not used subcontractors on the current contract with BPA, as it has not been necessary to meet the requirements or needs of any WA to date. However, we have established strong relationships with many subconsultants, and have successfully subcontracted to other survey firms in the past who supplied technician-level staff to work with our Survey Party Chiefs.

Opportunities for Subcontracting

We intend to use qualified small and small disadvantaged business firms as subcontractors on projects that lend themselves to subcontracting opportunities. We expect that we will subcontract under the following circumstances:

1. Projects that require a professional registration in a state where OBEC does not have a registered staff member.
2. Projects that are far from one of our offices where the use of a subcontractor's Survey Technician would save BPA funding.
3. Larger projects that require multiple crews where we could subcontract out for multiple Survey Technicians.
4. Projects requiring federally-designated small business participation, such as 8(a), Veteran-Owned Small Business, or other contractor designations.

On projects with subcontracting opportunities, OBEC's Survey Manager will maintain full control, oversight, and responsibility for the project.

Proposed Subconsultants

We selected these subconsultants for their geographic locations, staff qualifications, past BPA experience, and states in which they hold professional registrations. See Section 1 for their qualifications.

- Alcantar and Associates, LLC – Survey Party Chief, Survey Technician
  - Art Colunga
  - Ed Alcantar
- APS Surveying & Mapping – Idaho, Oregon, and Washington PLS and Survey Technician
  - Tyler Sweet, PLS
  - Scott Edwards, PLS, CFedS
- William Colisch – California, Washington, and Oregon PLS and Survey Technician
  - William Colisch, PLS
  - Keith Colisch
- Perigree Consulting, LLC – Utah, Nevada, Arizona, and Colorado PLS
  - Mark Byrd, PLS
  - Marshall Byrd, PLS
- Ruen-Yeager & Associates, Inc. – Idaho PLS, Survey Party Chief, Survey Technician, and Drafter/CAD Operator II
  - Steven Binnall, PLS
  - Steven Sprague, PLS
  - Bruce Clark
  - Don Crawford

OBEC Maintains Oversight

OBEC's Survey Manager will oversee the subconsultant's work and maintain control of the project and deliverables. For field work that is far from our offices, we will use one of our subconsultant's Survey Technicians. We will mentor the Survey Technician to grow their skills to become a Survey Party Chief. Once we are confident in the Survey Technician's abilities and knowledge of BPA standards, and if BPA agrees with our plan, we will subcontract a crew for work in geographically remote areas, providing a cost savings to BPA. We could also subcontract work for a Drafter/CAD Operator II for larger projects, making use of OBEC's videoconferencing capabilities to coordinate efforts.

Proposed Percentages of Work for Subconsultants

On projects that lend themselves to subcontracting, we could subcontract the following percentages based on our past BPA project experience and calculations of percentage breakdown by classification:

- Up to 20% for a Survey Technician
- Up to 10% for a Drafter/CAD Operator II
- Up to 30% for a Registered Land Surveyor

Upon selection for a new contract, we will negotiate a detailed subcontracting plan with BPA prior to the award, as required.

ATTACHMENT 2 -- REPRESENTATIONS AND CERTIFICATIONS

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TAXPAYER IDENTIFICATION NUMBER (4-1)
(DEC 98)(BPI 4.1.2.1)

NOTE:
(1) Taxpayer Identification Number (TIN) reporting does not apply to a Federal agency, a foreign government or a foreign business not engaged in business or trade or without an agent capable of receiving payment within the United States.
(2) The TIN for BPA is 93-0334712.

All offerors, other than noted above, are required to submit its Taxpayer Identification Number requested below in order to comply with the Department of Treasury payment processing requirements of 31 U.S.C. 3332 and 7701, and the reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service. If the resulting contract is subject to those requirements, the failure or refusal by the offeror to furnish the information may result in a suspension of payment and a thirty-one (31) percent reduction of payments otherwise due under the contract.

Taxpayer Identification Number 93-0552628.

TYPE OF BUSINESS ORGANIZATION (11-1)
(SEP 02)(BPI 11.10.2.1)

The offeror, by checking the applicable box, represents that-

(a) It operates as /X/ a corporation incorporated under the laws of the State of Oregon, / / an individual, / / a partnership, / / a nonprofit organization, or / / a joint venture; or

(b) It is a / / local, / / state, / / federally recognized Indian tribe, or / / other governmental entity, (*describe* _____); or

(c) If the offeror is a foreign entity, it operates as / / an individual, / / a partnership, / / a nonprofit organization, / / a joint venture, or / / a corporation, registered for business in _____ (country) and / / does / / does not have an office or fiscal paying agent in the United States; or

(d) It is / / a type of business organization not otherwise listed above (*describe* _____).

SUPPLIER DIVERSITY AWARD REPRESENTATION (8-1)
(OCT 13)(BPI 8.1.3)

(a) CO Fill-in:

NAICS CODE	Size Standard in Millions of Dollars OR Size Standards in Number of Employees
541370	$15.0 M

(b) The offeror represents that:

(1) it is /__/, is not /X/ a small business concern.

(2) it is /__/, is not /X/ a disadvantaged small business concern (this includes Native American owned small business, 8-A Certified or Hub-zone and any other disadvantaged small business concerns).

(3) it is /__/, is not /X/ a women-owned small business concern.

(4) it is /__/, is not /X/ a veteran-owned small business concern.

(5) it is /__/, is not /X/ a disabled veteran-owned small business concern.

BUY AMERICAN CERTIFICATE (9-1)
(OCT 93)(BPI 9.1.6)

(a) The Offeror certifies that each end product, except the end products listed below, is a domestic end product (as defined in the clause entitled "Buy American Act - Supplies"), and that components of unknown origin have been considered to have been mined, produced, or manufactured outside the United States.

EXCLUDED END PRODUCTS AND COUNTRY OF ORIGIN
(List as necessary)

_____

_____

_____

(b) An Offeror who proposes to furnish domestic source end products containing components of foreign origin the cost of which exceeds 15 percent of the offered price, shall furnish in the spaces below a complete list of components of foreign origin in sufficient detail to clearly identify each.

FOREIGN COMPONENTS AND POINT OF ORIGIN

_____

_____

_____

The Offeror represents that the total cost of the above components of foreign origin, including applicable duty and transportation costs, constitutes ____ percent of the cost of all components to be incorporated in the end products being furnished. The Offeror agrees to furnish, for the exclusive use of BPA, such additional information as the Contracting Officer may request in order to verify the foregoing in evaluating the offer.

The Offeror agrees that no components of foreign origin, other than those listed above, will be incorporated in the end products being furnished without written approval of the Contracting Officer.

(c) Where an Offeror fails to complete the representation of foreign content provision above, and in the absence of any previous experience with the offeror or information to the contrary, BPA assumes that domestic firms intend to furnish domestic end products and that foreign firms intend to furnish products of foreign origin.

OFFEROR REPRESENTATIONS AND CERTIFICATIONS – PROHIBITED FOREIGN TRANSACTIONS (9-9) (OCT 13)(BPI 9.3.2.1)

(a) The representations in (b)(1) and certifications in (b)(2) and b(3) do not apply if the procurement is covered by a trade agreement as defined in BPI 9.4.2 and the offeror has certified that all the offered products are designated country end products or designated country material.

(b) By submission of its offer, the offeror:

(1) Represents, to the best of its knowledge that the offeror does not export any sensitive technology as defined in Pub. L. 111-195 Section 106 to the government of Iran or any entities or individuals owned or controlled by, or acting on the behalf of the government of Iran.

(2) Certifies that the offeror, or any person owned of controlled by the offeror, does not engage in activities that may result in sanctions under Section 5 of the Iran Sanctions Act (Pub. L. 111-195 et seq.).

(3) Certifies that the offeror, and any person owned or controlled by the offeror, does not knowingly engage in any transaction that exceeds $3,000 with Iran's Revolutionary Guard Corps or any of its officials, agents, or affiliates, the property and interests in property of which are blocked pursuant to the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.)

(4) Certifies that the offeror does not conduct any restricted business operations in Sudan as defined in in the Sudan Accountability and Divestment Act of 2007 (Pub. L. 110-174).

		OBEC		ALCANTAR		APS		WILLIAM COLISCH		PERIGEE		RUEN-YEAGER	
LINE ITEM	JOB DESCRIPTIONS	HR RATE	OT HOURLY RATE	HR RATE	OT HOURLY RATE	HR RATE	OT HOURLY RATE	HR RATE	OT HOURLY RATE	HR RATE	OT HOURLY RATE	HR RATE	OT HOURLY RATE
BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017													
1	Survey Manager	$ 157.41	N/A	NA	NA	$ 110.00	NA	NA	NA	$ 120.00	NA	$ 128.75	NA
2	Project Surveyor	$ 113.69	N/A	$ 120.21	NA	$ 85.00	NA	$ 138.71	NA	$ 98.00	NA	$ 110.41	NA
3	Survey Party Chief	$ 96.20	$ 112.77	$ 108.25	$ 110.25	$ 85.00	$ 106.25	-	-	$ 55.00	$ 74.00	$ 74.39	$ 74.39
4	Survey Technician	$ 78.71	$ 92.27	$ 99.70	$ 101.55	$ 75.00	$ 93.75	$ 81.77	$ 95.86	$ 50.00	$ 67.00	$ 68.44	$ 68.44
5	Survey Aid	$ 61.94	$ 72.62	$ 79.76	$ 81.24	$ 60.00	$ 75.00	-	-	$ 39.00	$ 52.00	$ 65.47	$ 65.47
6	Drafter / CAD Operator II	$ 78.71	$ 92.27	$ 79.76	$ 81.24	$ 85.00	$ 106.25	-	-	$ 55.00	$ 73.00	$ 65.47	$ 65.47
7	Land Survey Office Technician	$ 96.20	$ 112.77	$ 108.25	$ 110.25	$ 85.00	$ 106.25	-	-	$ 50.00	$ 67.00	$ 77.37	$ 77.37
8	Cartographic Technician	$ 78.71	$ 92.27	$ 71.22	$ 72.54	$ 85.00	$ 106.25	-	-	$ 68.00	$ 90.00	$ 77.37	$ 77.37
9	GIS Technician	$ 93.28	$ 109.35	$ 91.16	$ 92.85	$ 95.00	$ 118.75	-	-	$ 67.00	$ 90.00	$ 77.37	$ 77.37
10	Clerical / Administration	$ 71.42	$ 83.72	$ 71.22	$ 72.54	$ 54.00	$ 67.50	-	-	$ 55.00	$ 73.00	$ 65.47	$ 65.47
11	GIS Analyst	$ 111.50	$ 130.71	$ 91.16	$ 92.85	$ 110.00	$ 137.50	-	-	$ 98.00	$ 130.00	$ 128.75	NA
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018													
12	Project Manager	$ 162.00	N/A	NA	NA	$ 115.00	NA	NA	NA	$ 126.00	NA	$ 131.97	NA
13	Registered Land Surveyor	$ 117.00	N/A	$ 123.82	NA	$ 89.00	NA	$ 142.75	NA	$ 103.00	NA	$ 113.17	NA
14	Survey Party Chief	$ 99.00	$ 116.05	$ 111.50	$ 113.56	$ 89.00	$ 111.25	-	-	$ 58.00	$ 77.00	$ 76.25	$ 76.25
15	Survey Technician	$ 81.00	$ 94.95	$ 102.69	$ 104.60	$ 78.00	$ 97.50	$ 84.15	$ 98.65	$ 53.00	$ 70.00	$ 70.15	$ 70.49
16	Survey Aid	$ 63.75	$ 74.73	$ 82.16	$ 83.68	$ 63.00	$ 78.75	-	-	$ 41.00	$ 55.00	$ 67.10	$ 67.10
17	Drafter / CAD Operator II	$ 81.00	$ 94.95	$ 82.16	$ 83.68	$ 89.00	$ 111.25	-	-	$ 57.00	$ 76.00	$ 67.10	$ 67.10
18	Land Survey Office Technician	$ 99.00	$ 116.05	$ 111.50	$ 113.56	$ 89.00	$ 111.25	-	-	$ 53.00	$ 70.00	$ 79.30	$ 79.30
19	Cartographic Technician	$ 81.00	$ 94.95	$ 73.35	$ 74.71	$ 89.00	$ 111.25	-	-	$ 71.00	$ 94.00	$ 79.30	$ 79.30
20	GIS Technician	$ 96.00	$ 112.54	$ 93.89	$ 95.63	$ 99.00	$ 123.75	-	-	$ 71.00	$ 94.00	$ 79.30	$ 79.30
21	Clerical / Administration	$ 73.50	$ 86.16	$ 73.35	$ 74.71	$ 57.00	$ 71.25	-	-	$ 58.00	$ 77.00	$ 67.10	$ 67.10
22	GIS Analyst	$ 114.75	$ 134.52	$ 93.89	$ 95.63	$ 115.00	$ 143.75	-	-	$ 103.00	$ 137.00	$ 131.97	NA
OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019													
23	Project Manager	$ 166.71	N/A	NA	NA	$ 120.00	NA	NA	NA	$ 133.00	NA	$ 135.27	NA
24	Registered Land Surveyor	$ 120.40	N/A	$ 127.53	NA	$ 93.00	NA	$ 146.90	NA	$ 108.00	NA	$ 116.00	NA
25	Survey Party Chief	$ 101.88	$ 119.44	$ 114.84	$ 116.97	$ 93.00	$ 116.25	-	-	$ 61.00	$ 81.00	$ 78.16	$ 78.16
26	Survey Technician	$ 83.36	$ 97.72	$ 105.78	$ 107.73	$ 82.00	$ 102.50	$ 86.60	$ 101.52	$ 55.00	$ 74.00	$ 71.91	$ 71.91
24	Survey Aid	$ 65.61	$ 76.91	$ 84.62	$ 86.19	$ 66.00	$ 92.50	-	-	$ 43.00	$ 58.00	$ 68.78	$ 68.78
28	Drafter / CAD Operator II	$ 83.36	$ 97.72	$ 84.62	$ 86.19	$ 93.00	$ 116.25	-	-	$ 60.00	$ 80.00	$ 68.78	$ 68.78
29	Land Survey Office Technician	$ 101.88	$ 119.44	$ 114.84	$ 116.97	$ 93.00	$ 116.25	-	-	$ 55.00	$ 74.00	$ 81.29	$ 81.29
30	Cartographic Technician	$ 83.36	$ 97.72	$ 75.55	$ 76.95	$ 93.00	$ 116.25	-	-	$ 75.00	$ 99.00	$ 81.29	$ 81.29
31	GIS Technician	$ 98.79	$ 115.82	$ 96.71	$ 98.50	$ 103.00	$ 128.75	-	-	$ 74.00	$ 99.00	$ 81.29	$ 81.29
32	Clerical / Administration	$ 75.64	$ 88.67	$ 75.55	$ 76.95	$ 60.00	$ 75.00	-	-	$ 61.00	$ 80.00	$ 68.78	$ 68.78
33	GIS Analyst	$ 118.09	$ 138.44	$ 96.71	$ 98.50	$ 120.00	$ 150.00	-	-	$ 108.00	$ 143.00	$ 135.27	NA
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020													
34	Project Manager	$ 171.57	N/A	NA	NA	$ 125.00	NA	NA	NA	$ 139.00	NA	$ 138.65	NA
35	Registered Land Surveyor	$ 123.91	N/A	$ 131.36	NA	$ 97.00	NA	$ 151.18	NA	$ 113.00	NA	$ 118.90	NA
36	Survey Party Chief	$ 104.85	$ 122.91	$ 118.29	$ 120.48	$ 97.00	$ 121.25	-	-	$ 64.00	$ 85.00	$ 80.11	$ 80.11
37	Survey Technician	$ 85.79	$ 100.57	$ 108.95	$ 110.97	$ 86.00	$ 107.50	$ 89.12	$ 104.47	$ 58.00	$ 77.00	$ 73.70	$ 73.70
38	Survey Aid	$ 67.52	$ 79.15	$ 87.16	$ 88.77	$ 70.00	$ 87.50	-	-	$ 46.00	$ 61.00	$ 70.50	$ 70.50
39	Drafter / CAD Operator II	$ 85.79	$ 100.57	$ 87.16	$ 88.77	$ 97.00	$ 121.25	-	-	$ 63.00	$ 84.00	$ 70.50	$ 70.50
40	Land Survey Office Technician	$ 104.85	$ 122.91	$ 118.29	$ 120.48	$ 97.00	$ 121.25	-	-	$ 58.00	$ 77.00	$ 83.32	$ 83.32
41	Cartographic Technician	$ 85.79	$ 100.57	$ 77.82	$ 79.26	$ 97.00	$ 121.25	-	-	$ 79.00	$ 104.00	$ 83.32	$ 83.32
42	GIS Technician	$ 101.67	$ 119.19	$ 99.61	$ 101.46	$ 108.00	$ 135.00	-	-	$ 78.00	$ 104.00	$ 83.32	$ 83.32
43	Clerical / Administration	$ 77.84	$ 91.25	$ 77.82	$ 79.26	$ 63.00	$ 78.75	-	-	$ 64.00	$ 84.00	$ 70.50	$ 70.50
44	GIS Analyst	$ 121.53	$ 142.47	$ 99.61	$ 101.46	$ 125.00	$ 156.25	-	-	$ 114.00	$ 151.00	$ 138.65	NA
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021													
45	Project Manager	$ 176.57	N/A	NA	NA	$ 131.00	NA	NA	NA	$ 146.00	NA	$ 142.12	NA
46	Registered Land Surveyor	$ 127.52	N/A	$ 135.30	NA	$ 101.00	NA	$ 155.57	NA	$ 119.00	NA	$ 121.88	NA
47	Survey Party Chief	$ 107.90	$ 126.49	$ 121.84	$ 124.09	$ 101.00	$ 126.25	-	-	$ 67.00	$ 90.00	$ 82.12	$ 82.12
48	Survey Technician	$ 88.28	$ 103.50	$ 112.22	$ 114.30	$ 90.00	$ 112.50	$ 91.71	$ 107.51	$ 61.00	$ 81.00	$ 75.55	$ 75.55
49	Survey Aid	$ 69.48	$ 81.45	$ 89.77	$ 91.44	$ 72.00	$ 90.00	-	-	$ 48.00	$ 64.00	$ 72.26	$ 72.26
50	Drafter / CAD Operator II	$ 88.28	$ 103.50	$ 89.77	$ 91.44	$ 101.00	$ 126.25	-	-	$ 66.00	$ 88.00	$ 72.26	$ 72.26
51	Land Survey Office Technician	$ 107.90	$ 126.49	$ 121.84	$ 124.09	$ 101.00	$ 126.25	-	-	$ 61.00	$ 81.00	$ 85.40	$ 85.40
52	Cartographic Technician	$ 88.28	$ 103.50	$ 80.16	$ 81.64	$ 101.00	$ 126.25	-	-	$ 82.00	$ 109.00	$ 85.40	$ 85.40
53	GIS Technician	$ 104.63	$ 122.66	$ 102.60	$ 104.50	$ 113.00	$ 141.25	-	-	$ 82.00	$ 109.00	$ 85.40	$ 85.40
54	Clerical / Administration	$ 80.11	$ 93.91	$ 80.16	$ 81.64	$ 66.00	$ 82.50	-	-	$ 67.00	$ 89.00	$ 72.26	$ 72.26
55	GIS Analyst	$ 125.07	$ 146.62	$ 102.60	$ 104.50	$ 131.00	$ 163.75	-	-	$ 119.00	$ 158.00	$ 142.12	NA

BASE YEAR: FEBRUARY 1, 2016 - JANUARY 31, 2017								
	2.91%	165.00%	10.00%		117.23%	165.00%	10.00%	
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
OBEC								
Survey Manager	$ 54.00	$ 89.10	$ 14.31	$ 157.41	N/A	N/A	N/A	N/A
Project Surveyor	$ 39.00	$ 64.35	$ 10.34	$ 113.69	N/A	N/A	N/A	N/A
Survey Party Chief	$ 33.00	$ 54.45	$ 8.75	$ 96.20	$ 38.69	$ 63.83	$ 10.25	$ 112.77
Survey Technician	$ 27.00	$ 44.55	$ 7.16	$ 78.71	$ 31.65	$ 52.23	$ 8.39	$ 92.27
Survey Aid	$ 21.25	$ 35.06	$ 5.63	$ 61.94	$ 24.91	$ 41.10	$ 6.60	$ 72.62
Drafter / CAD Operator II	$ 27.00	$ 44.55	$ 7.16	$ 78.71	$ 31.65	$ 52.23	$ 8.39	$ 92.27
Land Survey Office Technician	$ 33.00	$ 54.45	$ 8.75	$ 96.20	$ 38.69	$ 63.83	$ 10.25	$ 112.77
Cartographic Technician	$ 27.00	$ 44.55	$ 7.16	$ 78.71	$ 31.65	$ 52.23	$ 8.39	$ 92.27
GIS Technician	$ 32.00	$ 52.80	$ 8.48	$ 93.28	$ 37.51	$ 61.90	$ 9.94	$ 109.35
Clerical / Administration	$ 24.50	$ 40.43	$ 6.49	$ 71.42	$ 28.72	$ 47.39	$ 7.61	$ 83.72
GIS Analyst	$ 38.25	$ 63.11	$ 10.14	$ 111.50	$ 44.84	$ 73.99	$ 11.88	$ 130.71
ALCANTAR								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 42.20	$ 67.09	$ 10.93	$ 120.21	NA	NA	NA	NA
Survey Party Chief	$ 38.00	$ 60.41	$ 9.84	$ 108.25	$ 44.55	$ 55.68	$ 10.02	$ 110.25
Survey Technician	$ 35.00	$ 55.64	$ 9.06	$ 99.70	$ 41.03	$ 51.29	$ 9.23	$ 101.55
Survey Aid	$ 28.00	$ 44.51	$ 7.25	$ 79.76	$ 32.82	$ 41.03	$ 7.39	$ 81.24
Drafter / CAD Operator II	$ 28.00	$ 44.51	$ 7.25	$ 79.76	$ 32.82	$ 41.03	$ 7.39	$ 81.24
Land Survey Office Technician	$ 38.00	$ 60.41	$ 9.84	$ 108.25	$ 44.55	$ 55.68	$ 10.02	$ 110.25
Cartographic Technician	$ 25.00	$ 39.74	$ 6.47	$ 71.22	$ 29.31	$ 36.63	$ 6.59	$ 72.54
GIS Technician	$ 32.00	$ 50.87	$ 8.29	$ 91.16	$ 37.51	$ 46.89	$ 8.44	$ 92.85
Clerical / Administration	$ 25.00	$ 39.74	$ 6.47	$ 71.22	$ 29.31	$ 36.63	$ 6.59	$ 72.54
GIS Analyst	$ 32.00	$ 50.87	$ 8.29	$ 91.16	$ 37.51	$ 46.89	$ 8.44	$ 92.85
APS								
Survey Manager	$ 45.00	$ 68.50	$ 11.35	$ 124.85	NA	NA	NA	NA
Project Surveyor	$ 32.00	$ 48.71	$ 8.07	$ 88.78	NA	NA	NA	NA
Survey Party Chief	$ 32.00	$ 48.71	$ 8.07	$ 88.78	$ 48.00	$ 68.16	$ 11.62	$ 127.78
Survey Technician	$ 28.00	$ 42.62	$ 7.06	$ 77.69	$ 42.00	$ 59.64	$ 10.16	$ 111.80
Survey Aid	$ 22.00	$ 33.49	$ 5.55	$ 61.04	$ 33.00	$ 46.86	$ 7.99	$ 87.85
Drafter / CAD Operator II	$ 34.00	$ 51.76	$ 8.58	$ 94.33	$ 51.00	$ 72.42	$ 12.34	$ 135.76
Land Survey Office Technician	$ 38.00	$ 57.85	$ 9.58	$ 105.43	$ 57.00	$ 80.94	$ 13.79	$ 151.73
Cartographic Technician	$ 34.00	$ 51.76	$ 8.58	$ 94.33	$ 51.00	$ 72.42	$ 12.34	$ 135.76
GIS Technician	$ 40.00	$ 60.89	$ 10.09	$ 110.98	$ 60.00	$ 85.20	$ 14.52	$ 159.72
Clerical / Administration	$ 20.00	$ 30.45	$ 5.04	$ 55.49	$ 30.00	$ 42.60	$ 7.26	$ 79.86
GIS Analyst	$ 45.00	$ 68.50	$ 11.35	$ 124.85	$ 67.50	$ 95.85	$ 16.34	$ 179.69
WILLIAM COLISCH								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 48.50	$ 77.60	$ 12.61	$ 138.71	NA	NA	NA	NA
Survey Party Chief	$ 38.36	$ 61.38	$ 9.97	$ 109.71	$ 44.97	$ 71.95	$ 11.69	$ 128.61
Survey Technician	$ 28.59	$ 45.74	$ 7.43	$ 81.77	$ 33.52	$ 53.63	$ 8.71	$ 95.86
Survey Aid	-	-	-	-	-	-	-	-
Drafter / CAD Operator II	-	-	-	-	-	-	-	-
Land Survey Office Technician	-	-	-	-	-	-	-	-
Cartographic Technician	-	-	-	-	-	-	-	-
GIS Technician	-	-	-	-	-	-	-	-
Clerical / Administration	-	-	-	-	-	-	-	-
GIS Analyst	-	-	-	-	-	-	-	-
PERIGEE								
Survey Manager	$ 40.24	$ 70.42	$ 10.06	$ 120.00	N/A	N/A	N/A	N/A
Project Surveyor	$ 32.77	$ 57.35	$ 8.19	$ 98.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 18.63	$ 32.60	$ 4.66	$ 55.00	$ 27.95	$ 39.12	$ 6.99	$ 74.00

Survey Technician	$ 16.93	$ 29.63	$ 4.23	$ 50.00	$ 25.40	$ 35.55	$ 6.35	$ 67.00
Survey Aid	$ 13.27	$ 23.22	$ 3.32	$ 39.00	$ 19.91	$ 27.87	$ 4.98	$ 52.00
Drafter / CAD Operator II	$ 18.37	$ 32.15	$ 4.59	$ 55.00	$ 27.56	$ 38.58	$ 6.89	$ 73.00
Land Survey Office Technician	$ 16.93	$ 29.63	$ 4.23	$ 50.00	$ 25.40	$ 35.55	$ 6.35	$ 67.00
Cartographic Technician	$ 22.75	$ 39.81	$ 5.69	$ 68.00	$ 34.13	$ 47.78	$ 8.53	$ 90.00
GIS Technician	$ 22.65	$ 39.64	$ 5.66	$ 67.00	$ 33.98	$ 47.57	$ 8.49	$ 90.00
Clerical / Administration	$ 18.47	$ 32.32	$ 4.62	$ 55.00	$ 27.71	$ 38.79	$ 6.93	$ 73.00
GIS Analyst	$ 32.84	$ 57.47	$ 8.21	$ 98.00	$ 49.26	$ 68.96	$ 12.32	$ 130.00
RUEN-YEAGER								
Survey Manager	$ 45.43	$ 71.62	$ 11.70	$ 128.75	NA	NA	NA	NA
Project Surveyor	$ 38.96	$ 61.42	$ 10.04	$ 110.41	NA	NA	NA	NA
Survey Party Chief	$ 26.25	$ 41.38	$ 6.76	$ 74.39	$ 39.38	$ 28.25	$ 6.76	$ 74.39
Survey Technician	$ 24.15	$ 38.07	$ 6.22	$ 68.44	$ 36.23	$ 25.99	$ 6.22	$ 68.44
Survey Aid	$ 23.10	$ 36.41	$ 5.95	$ 65.46	$ 34.65	$ 24.86	$ 5.95	$ 65.46
Drafter / CAD Operator II	$ 23.10	$ 36.41	$ 5.95	$ 65.46	$ 34.65	$ 24.86	$ 5.95	$ 65.46
Land Survey Office Technician	$ 27.30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
Cartographic Technician	$ 27.30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
GIS Technician	$ 27.30	$ 43.04	$ 7.03	$ 77.37	$ 40.95	$ 29.38	$ 7.03	$ 77.37
Clerical / Administration	$ 23.10	$ 36.41	$ 5.95	$ 65.46	$ 34.65	$ 24.86	$ 5.95	$ 65.46
GIS Analyst	$ 45.43	$ 71.62	$ 11.70	$ 128.75	NA	NA	NA	NA
OPTION YEAR ONE: FEBRUARY 1, 2017 - JANUARY 31, 2018								
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
OBEC								
Survey Manager	$ 55.57	$ 91.70	$ 14.73	$ 162.00	N/A	N/A	N/A	N/A
Project Surveyor	$ 40.14	$ 66.22	$ 10.64	$ 117.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 33.96	$ 56.04	$ 9.00	$ 99.00	$ 39.81	$ 65.69	$ 10.55	$ 116.05
Survey Technician	$ 27.79	$ 45.85	$ 7.36	$ 81.00	$ 32.57	$ 53.75	$ 8.63	$ 94.95
Survey Aid	$ 21.87	$ 36.08	$ 5.80	$ 63.75	$ 25.64	$ 42.30	$ 6.79	$ 74.73
Drafter / CAD Operator II	$ 27.79	$ 45.85	$ 7.36	$ 81.00	$ 32.57	$ 53.75	$ 8.63	$ 94.95
Land Survey Office Technician	$ 33.96	$ 56.04	$ 9.00	$ 99.00	$ 39.81	$ 65.69	$ 10.55	$ 116.05
Cartographic Technician	$ 27.79	$ 45.85	$ 7.36	$ 81.00	$ 32.57	$ 53.75	$ 8.63	$ 94.95
GIS Technician	$ 32.93	$ 54.34	$ 8.73	$ 96.00	$ 38.61	$ 63.70	$ 10.23	$ 112.54
Clerical / Administration	$ 25.21	$ 41.60	$ 6.68	$ 73.50	$ 29.56	$ 48.77	$ 7.83	$ 86.16
GIS Analyst	$ 39.36	$ 64.95	$ 10.43	$ 114.75	$ 46.15	$ 76.14	$ 12.23	$ 134.52
ALCANTAR								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 43.47	$ 69.10	$ 11.26	$ 123.82	NA	NA	NA	NA
Survey Party Chief	$ 39.14	$ 62.22	$ 10.14	$ 111.50	$ 45.88	$ 57.35	$ 10.32	$ 113.56
Survey Technician	$ 36.05	$ 57.31	$ 9.34	$ 102.69	$ 42.26	$ 52.83	$ 9.51	$ 104.60
Survey Aid	$ 28.84	$ 45.85	$ 7.47	$ 82.16	$ 33.81	$ 42.26	$ 7.61	$ 83.68
Drafter / CAD Operator II	$ 28.84	$ 45.85	$ 7.47	$ 82.16	$ 33.81	$ 42.26	$ 7.61	$ 83.68
Land Survey Office Technician	$ 39.14	$ 62.22	$ 10.14	$ 111.50	$ 45.88	$ 57.35	$ 10.32	$ 113.56
Cartographic Technician	$ 25.75	$ 40.93	$ 6.67	$ 73.35	$ 30.19	$ 37.73	$ 6.79	$ 74.71
GIS Technician	$ 32.96	$ 52.40	$ 8.54	$ 93.89	$ 38.64	$ 48.30	$ 8.69	$ 95.63
Clerical / Administration	$ 25.75	$ 40.93	$ 6.67	$ 73.35	$ 30.19	$ 37.73	$ 6.79	$ 74.71
GIS Analyst	$ 32.96	$ 52.40	$ 8.54	$ 93.89	$ 38.64	$ 48.30	$ 8.69	$ 95.63
APS								
Survey Manager	$ 47.00	$ 71.55	$ 11.85	$ 130.40	NA	NA	NA	NA
Project Surveyor	$ 33.00	$ 50.24	$ 8.32	$ 91.56	NA	NA	NA	NA
Survey Party Chief	$ 33.00	$ 50.24	$ 8.32	$ 91.56	$ 49.50	$ 70.29	$ 11.98	$ 131.77
Survey Technician	$ 29.00	$ 44.15	$ 7.31	$ 80.46	$ 43.50	$ 61.77	$ 10.53	$ 115.80
Survey Aid	$ 23.00	$ 35.01	$ 5.80	$ 63.81	$ 34.50	$ 48.99	$ 8.35	$ 91.84
Drafter / CAD Operator II	$ 36.00	$ 54.80	$ 9.08	$ 99.88	$ 54.00	$ 76.68	$ 13.07	$ 143.75
Land Survey Office Technician	$ 40.00	$ 60.89	$ 10.09	$ 110.98	$ 60.00	$ 85.20	$ 14.52	$ 159.72
Cartographic Technician	$ 36.00	$ 54.80	$ 9.08	$ 99.88	$ 54.00	$ 76.68	$ 13.07	$ 143.75

GIS Technician	$ 42.00	$ 63.94	$ 10.59	$ 116.53	$ 63.00	$ 89.46	$ 15.25	$ 167.71
Clerical / Administration	$ 21.00	$ 31.97	$ 5.30	$ 58.27	$ 31.50	$ 44.73	$ 7.62	$ 83.85
GIS Analyst	$ 47.00	$ 71.55	$ 11.85	$ 130.40	$ 70.50	$ 100.11	$ 17.06	$ 187.67
WILLIAM COLISCH								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 49.91	$ 79.86	$ 12.98	$ 142.75	NA	NA	NA	NA
Survey Party Chief	$ 39.48	$ 63.16	$ 10.26	$ 112.90	$ 46.28	$ 74.04	$ 12.03	$ 132.36
Survey Technician	$ 29.42	$ 47.08	$ 7.65	$ 84.15	$ 34.49	$ 55.19	$ 8.97	$ 98.65
Survey Aid	-	-	-	-	-	-	-	-
Drafter / CAD Operator II	-	-	-	-	-	-	-	-
Land Survey Office Technician	-	-	-	-	-	-	-	-
Cartographic Technician	-	-	-	-	-	-	-	-
GIS Technician	-	-	-	-	-	-	-	-
Clerical / Administration	-	-	-	-	-	-	-	-
GIS Analyst	-	-	-	-	-	-	-	-
PERIGEE								
Survey Manager	$ 42.25	$ 73.94	$ 10.56	$ 126.00	N/A	N/A	N/A	N/A
Project Surveyor	$ 34.41	$ 60.21	$ 8.60	$ 103.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 19.56	$ 34.23	$ 4.89	$ 58.00	$ 29.34	$ 41.08	$ 7.34	$ 77.00
Survey Technician	$ 17.78	$ 31.11	$ 4.44	$ 53.00	$ 26.66	$ 37.33	$ 6.67	$ 70.00
Survey Aid	$ 13.93	$ 24.38	$ 3.48	$ 41.00	$ 20.90	$ 29.26	$ 5.23	$ 55.00
Drafter / CAD Operator II	$ 19.29	$ 33.75	$ 4.82	$ 57.00	$ 28.93	$ 40.51	$ 7.23	$ 76.00
Land Survey Office Technician	$ 17.78	$ 31.11	$ 4.44	$ 53.00	$ 26.66	$ 37.33	$ 6.67	$ 70.00
Cartographic Technician	$ 23.89	$ 41.80	$ 5.97	$ 71.00	$ 35.83	$ 50.16	$ 8.96	$ 94.00
GIS Technician	$ 23.78	$ 41.62	$ 5.95	$ 71.00	$ 35.67	$ 49.94	$ 8.92	$ 94.00
Clerical / Administration	$ 19.39	$ 33.94	$ 4.85	$ 58.00	$ 29.09	$ 40.73	$ 7.27	$ 77.00
GIS Analyst	$ 34.48	$ 60.34	$ 8.62	$ 103.00	$ 51.72	$ 72.41	$ 12.93	$ 137.00
RUEN-YEAGER								
Survey Manager	$ 46.57	$ 73.41	$ 12.00	$ 131.97	NA	NA	NA	NA
Project Surveyor	$ 39.93	$ 62.95	$ 10.29	$ 113.17	NA	NA	NA	NA
Survey Party Chief	$ 26.91	$ 42.42	$ 6.93	$ 76.25	$ 40.36	$ 28.96	$ 6.93	$ 76.25
Survey Technician	$ 24.75	$ 39.02	$ 6.38	$ 70.15	$ 37.13	$ 26.64	$ 6.38	$ 70.15
Survey Aid	$ 23.68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
Drafter / CAD Operator II	$ 23.68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
Land Survey Office Technician	$ 27.98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
Cartographic Technician	$ 27.98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
GIS Technician	$ 27.98	$ 44.11	$ 7.21	$ 79.30	$ 41.97	$ 30.12	$ 7.21	$ 79.30
Clerical / Administration	$ 23.68	$ 37.33	$ 6.10	$ 67.10	$ 35.52	$ 25.48	$ 6.10	$ 67.10
GIS Analyst	$ 46.57	$ 73.41	$ 12.00	$ 131.97	NA	NA	NA	NA

OPTION YEAR TWO: FEBRUARY 1, 2018 - JANUARY 31, 2019

Job Description	Salary Base Rate	Overhead 165.00%	Profit 10.00%	Contract Billing Rate	OT Salary Base Rate	OT Overhead 165.00%	OT Profit 10.00%	OT Contract Billing Rate
OBEC								
Survey Manager	$ 57.19	$ 94.37	$ 15.16	$ 166.71	N/A	N/A	N/A	N/A
Project Surveyor	$ 41.31	$ 68.15	$ 10.95	$ 120.40	N/A	N/A	N/A	N/A
Survey Party Chief	$ 34.95	$ 57.67	$ 9.26	$ 101.88	$ 40.97	$ 67.60	$ 10.86	$ 119.44
Survey Technician	$ 28.60	$ 47.18	$ 7.58	$ 83.36	$ 33.52	$ 55.31	$ 8.88	$ 97.72
Survey Aid	$ 22.51	$ 37.13	$ 5.96	$ 65.61	$ 26.38	$ 43.53	$ 6.99	$ 76.91
Drafter / CAD Operator II	$ 28.60	$ 47.18	$ 7.58	$ 83.36	$ 33.52	$ 55.31	$ 8.88	$ 97.72
Land Survey Office Technician	$ 34.95	$ 57.67	$ 9.26	$ 101.88	$ 40.97	$ 67.60	$ 10.86	$ 119.44
Cartographic Technician	$ 28.60	$ 47.18	$ 7.58	$ 83.36	$ 33.52	$ 55.31	$ 8.88	$ 97.72
GIS Technician	$ 33.89	$ 55.92	$ 8.98	$ 98.79	$ 39.73	$ 65.56	$ 10.53	$ 115.82
Clerical / Administration	$ 25.95	$ 42.81	$ 6.88	$ 75.64	$ 30.42	$ 50.19	$ 8.06	$ 88.67
GIS Analyst	$ 40.51	$ 66.84	$ 10.74	$ 118.09	$ 47.49	$ 78.36	$ 12.59	$ 138.44
ALCANTAR								
Survey Manager	-	-	-	-	NA	NA	NA	NA

Project Surveyor	$ 44.77	$ 71.17	$ 11.59	$ 127.53	NA	NA	NA	NA
Survey Party Chief	$ 40.31	$ 64.09	$ 10.44	$ 114.84	$ 47.26	$ 59.08	$ 10.63	$ 116.97
Survey Technician	$ 37.13	$ 59.03	$ 9.62	$ 105.78	$ 43.53	$ 54.41	$ 9.79	$ 107.73
Survey Aid	$ 29.71	$ 47.22	$ 7.69	$ 84.62	$ 34.82	$ 43.53	$ 7.84	$ 86.19
Drafter / CAD Operator II	$ 29.71	$ 47.22	$ 7.69	$ 84.62	$ 34.82	$ 43.53	$ 7.84	$ 86.19
Land Survey Office Technician	$ 40.31	$ 64.09	$ 10.44	$ 114.84	$ 47.26	$ 59.08	$ 10.63	$ 116.97
Cartographic Technician	$ 26.52	$ 42.16	$ 6.87	$ 75.55	$ 31.09	$ 38.87	$ 7.00	$ 76.95
GIS Technician	$ 33.95	$ 53.97	$ 8.79	$ 96.71	$ 39.80	$ 49.75	$ 8.95	$ 98.50
Clerical / Administration	$ 26.52	$ 42.16	$ 6.87	$ 75.55	$ 31.09	$ 38.87	$ 7.00	$ 76.95
GIS Analyst	$ 33.95	$ 53.97	$ 8.79	$ 96.71	$ 39.80	$ 49.75	$ 8.95	$ 98.50
APS								
Survey Manager	$ 49.00	$ 74.59	$ 12.36	$ 135.95	NA	NA	NA	NA
Project Surveyor	$ 34.00	$ 51.76	$ 8.58	$ 94.33	NA	NA	NA	NA
Survey Party Chief	$ 34.00	$ 51.76	$ 8.58	$ 94.33	$ 51.00	$ 72.42	$ 12.34	$ 135.76
Survey Technician	$ 30.00	$ 45.67	$ 7.57	$ 83.24	$ 45.00	$ 63.90	$ 10.89	$ 119.79
Survey Aid	$ 24.00	$ 36.54	$ 6.05	$ 66.59	$ 36.00	$ 51.12	$ 8.71	$ 95.83
Drafter / CAD Operator II	$ 38.00	$ 57.85	$ 9.58	$ 105.43	$ 57.00	$ 80.94	$ 13.79	$ 151.73
Land Survey Office Technician	$ 42.00	$ 63.94	$ 10.59	$ 116.53	$ 63.00	$ 89.46	$ 15.25	$ 167.71
Cartographic Technician	$ 38.00	$ 57.85	$ 9.58	$ 105.43	$ 57.00	$ 80.94	$ 13.79	$ 151.73
GIS Technician	$ 44.00	$ 66.98	$ 11.10	$ 122.08	$ 66.00	$ 93.72	$ 15.97	$ 175.69
Clerical / Administration	$ 22.00	$ 33.49	$ 5.55	$ 61.04	$ 33.00	$ 46.86	$ 7.99	$ 87.85
GIS Analyst	$ 49.00	$ 74.59	$ 12.36	$ 135.95	$ 73.50	$ 104.37	$ 17.79	$ 195.66
WILLIAM COLISCH								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 51.36	$ 82.18	$ 13.35	$ 146.90	NA	NA	NA	NA
Survey Party Chief	$ 40.63	$ 65.00	$ 10.56	$ 116.19	$ 47.62	$ 76.20	$ 12.38	$ 136.21
Survey Technician	$ 30.28	$ 48.45	$ 7.87	$ 86.60	$ 35.50	$ 56.79	$ 9.23	$ 101.52
Survey Aid	-	-	-	-	-	-	-	-
Drafter / CAD Operator II	-	-	-	-	-	-	-	-
Land Survey Office Technician	-	-	-	-	-	-	-	-
Cartographic Technician	-	-	-	-	-	-	-	-
GIS Technician	-	-	-	-	-	-	-	-
Clerical / Administration	-	-	-	-	-	-	-	-
GIS Analyst	-	-	-	-	-	-	-	-
PERIGEE								
Survey Manager	$ 44.36	$ 77.64	$ 11.09	$ 133.00	N/A	N/A	N/A	N/A
Project Surveyor	$ 36.13	$ 63.23	$ 9.03	$ 108.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 20.54	$ 35.94	$ 5.13	$ 61.00	$ 30.81	$ 43.13	$ 7.70	$ 81.00
Survey Technician	$ 18.67	$ 32.66	$ 4.67	$ 55.00	$ 28.00	$ 39.20	$ 7.00	$ 74.00
Survey Aid	$ 14.63	$ 25.60	$ 3.66	$ 43.00	$ 21.95	$ 30.72	$ 5.49	$ 58.00
Drafter / CAD Operator II	$ 20.25	$ 35.44	$ 5.06	$ 60.00	$ 30.38	$ 42.53	$ 7.59	$ 80.00
Land Survey Office Technician	$ 18.67	$ 32.66	$ 4.67	$ 55.00	$ 28.00	$ 39.20	$ 7.00	$ 74.00
Cartographic Technician	$ 25.08	$ 43.89	$ 6.27	$ 75.00	$ 37.62	$ 52.67	$ 9.41	$ 99.00
GIS Technician	$ 24.97	$ 43.70	$ 6.24	$ 74.00	$ 37.46	$ 52.44	$ 9.36	$ 99.00
Clerical / Administration	$ 20.36	$ 35.64	$ 5.09	$ 61.00	$ 30.54	$ 42.76	$ 7.64	$ 80.00
GIS Analyst	$ 36.21	$ 63.36	$ 9.05	$ 108.00	$ 54.31	$ 76.03	$ 13.58	$ 143.00
RUEN-YEAGER								
Survey Manager	$ 47.73	$ 73.24	$ 12.30	$ 136.59	NA	NA	NA	NA
Project Surveyor	$ 40.93	$ 64.53	$ 10.55	$ 117.13	NA	NA	NA	NA
Survey Party Chief	$ 27.58	$ 43.48	$ 7.11	$ 78.16	$ 41.37	$ 29.68	$ 7.11	$ 78.16
Survey Technician	$ 24.27	$ 40.00	$ 6.54	$ 71.91	$ 38.06	$ 27.31	$ 6.54	$ 71.91
Survey Aid	$ 24.27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
Drafter / CAD Operator II	$ 24.27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
Land Survey Office Technician	$ 28.68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
Cartographic Technician	$ 28.68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29

GIS Technician	$ 28.68	$ 45.21	$ 7.39	$ 81.29	$ 43.02	$ 30.87	$ 7.39	$ 81.29
Clerical / Administration	$ 24.27	$ 38.26	$ 6.25	$ 68.78	$ 36.40	$ 26.12	$ 6.25	$ 68.78
GIS Analyst	$ 47.73	$ 75.24	$ 12.30	$ 135.27	NA	NA	NA	NA
OPTION YEAR THREE: FEBRUARY 1, 2019 - JANUARY 31, 2020								
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
OBEC								
Survey Manager	$ 58.86	$ 97.12	$ 15.60	$ 171.57	N/A	N/A	N/A	N/A
Project Surveyor	$ 42.51	$ 70.14	$ 11.26	$ 123.91	N/A	N/A	N/A	N/A
Survey Party Chief	$ 35.97	$ 59.35	$ 9.53	$ 104.85	$ 42.17	$ 69.57	$ 11.17	$ 122.91
Survey Technician	$ 29.43	$ 48.56	$ 7.80	$ 85.79	$ 34.50	$ 56.92	$ 9.14	$ 100.57
Survey Aid	$ 23.16	$ 38.22	$ 6.14	$ 67.52	$ 27.15	$ 44.80	$ 7.20	$ 79.15
Drafter / CAD Operator II	$ 29.43	$ 48.56	$ 7.80	$ 85.79	$ 34.50	$ 56.92	$ 9.14	$ 100.57
Land Survey Office Technician	$ 35.97	$ 59.35	$ 9.53	$ 104.85	$ 42.17	$ 69.57	$ 11.17	$ 122.91
Cartographic Technician	$ 29.43	$ 48.56	$ 7.80	$ 85.79	$ 34.50	$ 56.92	$ 9.14	$ 100.57
GIS Technician	$ 34.88	$ 57.55	$ 9.24	$ 101.67	$ 40.89	$ 67.47	$ 10.84	$ 119.19
Clerical / Administration	$ 26.70	$ 44.06	$ 7.08	$ 77.84	$ 31.31	$ 51.65	$ 8.30	$ 91.25
GIS Analyst	$ 41.69	$ 68.79	$ 11.05	$ 121.53	$ 48.87	$ 80.64	$ 12.95	$ 142.47
ALCANTAR								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 46.11	$ 73.31	$ 11.94	$ 131.36	NA	NA	NA	NA
Survey Party Chief	$ 41.52	$ 66.01	$ 10.75	$ 118.29	$ 48.68	$ 60.85	$ 10.95	$ 120.48
Survey Technician	$ 38.25	$ 60.80	$ 9.90	$ 108.95	$ 44.84	$ 56.04	$ 10.09	$ 110.97
Survey Aid	$ 30.60	$ 48.64	$ 7.92	$ 87.16	$ 35.87	$ 44.84	$ 8.07	$ 88.77
Drafter / CAD Operator II	$ 30.60	$ 48.64	$ 7.92	$ 87.16	$ 35.87	$ 44.84	$ 8.07	$ 88.77
Land Survey Office Technician	$ 41.52	$ 66.01	$ 10.75	$ 118.29	$ 48.68	$ 60.85	$ 10.95	$ 120.48
Cartographic Technician	$ 27.32	$ 43.43	$ 7.07	$ 77.82	$ 32.03	$ 40.03	$ 7.21	$ 79.26
GIS Technician	$ 34.97	$ 55.59	$ 9.06	$ 99.61	$ 40.99	$ 51.24	$ 9.22	$ 101.46
Clerical / Administration	$ 27.32	$ 43.43	$ 7.07	$ 77.82	$ 32.03	$ 40.03	$ 7.21	$ 79.26
GIS Analyst	$ 34.97	$ 55.59	$ 9.06	$ 99.61	$ 40.99	$ 51.24	$ 9.22	$ 101.46
APS								
Survey Manager	$ 51.00	$ 77.64	$ 12.86	$ 141.50	NA	NA	NA	NA
Project Surveyor	$ 36.00	$ 54.80	$ 9.08	$ 99.88	NA	NA	NA	NA
Survey Party Chief	$ 36.00	$ 54.80	$ 9.08	$ 99.88	$ 54.00	$ 76.68	$ 13.07	$ 143.75
Survey Technician	$ 31.00	$ 47.19	$ 7.82	$ 86.01	$ 46.50	$ 66.03	$ 11.25	$ 123.78
Survey Aid	$ 25.00	$ 38.06	$ 6.31	$ 69.36	$ 37.50	$ 53.25	$ 9.08	$ 99.83
Drafter / CAD Operator II	$ 40.00	$ 60.89	$ 10.09	$ 110.98	$ 60.00	$ 85.20	$ 14.52	$ 159.72
Land Survey Office Technician	$ 44.00	$ 66.98	$ 11.10	$ 122.08	$ 66.00	$ 93.72	$ 15.97	$ 175.69
Cartographic Technician	$ 40.00	$ 60.89	$ 10.09	$ 110.98	$ 60.00	$ 85.20	$ 14.52	$ 159.72
GIS Technician	$ 46.00	$ 70.03	$ 11.60	$ 127.63	$ 69.00	$ 97.98	$ 16.70	$ 183.68
Clerical / Administration	$ 23.00	$ 35.01	$ 5.80	$ 63.81	$ 34.50	$ 48.99	$ 8.35	$ 91.84
GIS Analyst	$ 51.00	$ 77.64	$ 12.86	$ 141.50	$ 76.50	$ 108.63	$ 18.51	$ 203.64
WILLIAM COLISCH								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 52.86	$ 84.57	$ 13.74	$ 151.18	NA	NA	NA	NA
Survey Party Chief	$ 41.81	$ 66.89	$ 10.87	$ 119.57	$ 49.01	$ 78.42	$ 12.74	$ 140.17
Survey Technician	$ 31.16	$ 49.85	$ 8.10	$ 89.12	$ 35.53	$ 58.44	$ 9.50	$ 104.47
Survey Aid	-	-	-	-	-	-	-	-
Drafter / CAD Operator II	-	-	-	-	-	-	-	-
Land Survey Office Technician	-	-	-	-	-	-	-	-
Cartographic Technician	-	-	-	-	-	-	-	-
GIS Technician	-	-	-	-	-	-	-	-
Clerical / Administration	-	-	-	-	-	-	-	-
GIS Analyst	-	-	-	-	-	-	-	-
PERIGEE								
Survey Manager	$ 46.58	$ 81.52	$ 11.65	$ 139.00	N/A	N/A	N/A	N/A

Project Surveyor	$ 37.94	$ 66.39	$ 9.48	$ 113.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 21.57	$ 37.74	$ 5.39	$ 64.00	$ 32.35	$ 45.29	$ 8.09	$ 85.00
Survey Technician	$ 19.60	$ 34.30	$ 4.90	$ 58.00	$ 29.40	$ 41.16	$ 7.35	$ 77.00
Survey Aid	$ 15.36	$ 26.88	$ 3.84	$ 46.00	$ 23.04	$ 32.26	$ 5.76	$ 61.00
Drafter / CAD Operator II	$ 21.27	$ 37.21	$ 5.32	$ 63.00	$ 31.90	$ 44.66	$ 7.97	$ 84.00
Land Survey Office Technician	$ 19.60	$ 34.30	$ 4.90	$ 58.00	$ 29.40	$ 41.16	$ 7.35	$ 77.00
Cartographic Technician	$ 26.34	$ 46.09	$ 6.58	$ 79.00	$ 39.50	$ 55.31	$ 9.88	$ 104.00
GIS Technician	$ 26.22	$ 45.89	$ 6.56	$ 78.00	$ 39.33	$ 55.06	$ 9.83	$ 104.00
Clerical / Administration	$ 21.38	$ 37.42	$ 5.35	$ 64.00	$ 32.07	$ 44.90	$ 8.02	$ 84.00
GIS Analyst	$ 38.02	$ 66.53	$ 9.50	$ 114.00	$ 57.02	$ 79.83	$ 14.26	$ 151.00
RUEN-YEAGER								
Survey Manager	$ 48.92	$ 77.12	$ 12.60	$ 138.65	NA	NA	NA	NA
Project Surveyor	$ 41.96	$ 66.14	$ 10.81	$ 118.90	NA	NA	NA	NA
Survey Party Chief	$ 28.27	$ 44.56	$ 7.28	$ 80.11	$ 42.40	$ 30.42	$ 7.28	$ 80.11
Survey Technician	$ 26.01	$ 41.00	$ 6.70	$ 73.70	$ 39.01	$ 27.99	$ 6.70	$ 73.70
Survey Aid	$ 24.88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
Drafter / CAD Operator II	$ 24.88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
Land Survey Office Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
Cartographic Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
GIS Technician	$ 29.40	$ 46.34	$ 7.57	$ 83.32	$ 44.10	$ 31.64	$ 7.57	$ 83.32
Clerical / Administration	$ 24.88	$ 39.21	$ 6.41	$ 70.50	$ 37.31	$ 26.77	$ 6.41	$ 70.50
GIS Analyst	$ 48.92	$ 77.12	$ 12.60	$ 138.65	NA	NA	NA	NA
OPTION YEAR FOUR: FEBRUARY 1, 2020 - JANUARY 31, 2021								
Job Description	**Salary Base Rate**	**Overhead 165.00%**	**Profit 10.00%**	**Contract Billing Rate**	**OT Salary Base Rate**	**OT Overhead 165.00%**	**OT Profit 10.00%**	**OT Contract Billing Rate**
OBEC								
Survey Manager	$ 60.57	$ 99.94	$ 16.05	$ 176.57	N/A	N/A	N/A	N/A
Project Surveyor	$ 43.75	$ 72.18	$ 11.59	$ 127.52	N/A	N/A	N/A	N/A
Survey Party Chief	$ 37.02	$ 61.08	$ 9.81	$ 107.90	$ 43.39	$ 71.60	$ 11.50	$ 126.49
Survey Technician	$ 30.29	$ 49.97	$ 8.03	$ 88.28	$ 35.50	$ 58.58	$ 9.41	$ 103.50
Survey Aid	$ 23.84	$ 39.33	$ 6.32	$ 69.48	$ 27.94	$ 46.11	$ 7.40	$ 81.45
Drafter / CAD Operator II	$ 30.29	$ 49.97	$ 8.03	$ 88.28	$ 35.50	$ 58.58	$ 9.41	$ 103.50
Land Survey Office Technician	$ 37.02	$ 61.08	$ 9.81	$ 107.90	$ 43.39	$ 71.60	$ 11.50	$ 126.49
Cartographic Technician	$ 30.29	$ 49.97	$ 8.03	$ 88.28	$ 35.50	$ 58.58	$ 9.41	$ 103.50
GIS Technician	$ 35.89	$ 59.23	$ 9.51	$ 104.63	$ 42.08	$ 69.43	$ 11.15	$ 122.66
Clerical / Administration	$ 27.48	$ 45.35	$ 7.28	$ 80.11	$ 32.22	$ 53.16	$ 8.54	$ 93.91
GIS Analyst	$ 42.91	$ 70.79	$ 11.37	$ 125.07	$ 50.30	$ 82.99	$ 13.33	$ 146.62
ALCANTAR								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 47.50	$ 75.51	$ 12.30	$ 135.30	NA	NA	NA	NA
Survey Party Chief	$ 42.77	$ 67.99	$ 11.08	$ 121.84	$ 50.14	$ 62.67	$ 11.28	$ 124.09
Survey Technician	$ 39.39	$ 62.62	$ 10.20	$ 112.22	$ 46.18	$ 57.73	$ 10.39	$ 114.30
Survey Aid	$ 31.51	$ 50.10	$ 8.16	$ 89.77	$ 36.94	$ 46.18	$ 8.31	$ 91.44
Drafter / CAD Operator II	$ 31.51	$ 50.10	$ 8.16	$ 89.77	$ 36.94	$ 46.18	$ 8.31	$ 91.44
Land Survey Office Technician	$ 42.77	$ 67.99	$ 11.08	$ 121.84	$ 50.14	$ 62.67	$ 11.28	$ 124.09
Cartographic Technician	$ 28.14	$ 44.73	$ 7.29	$ 80.16	$ 32.99	$ 41.23	$ 7.42	$ 81.64
GIS Technician	$ 36.02	$ 57.26	$ 9.33	$ 102.60	$ 42.22	$ 52.78	$ 9.50	$ 104.50
Clerical / Administration	$ 28.14	$ 44.73	$ 7.29	$ 80.16	$ 32.99	$ 41.23	$ 7.42	$ 81.64
GIS Analyst	$ 36.02	$ 57.26	$ 9.33	$ 102.60	$ 42.22	$ 52.78	$ 9.50	$ 104.50
APS								
Survey Manager	$ 53.00	$ 80.68	$ 13.37	$ 147.05	NA	NA	NA	NA
Project Surveyor	$ 38.00	$ 57.85	$ 9.58	$ 105.43	NA	NA	NA	NA
Survey Party Chief	$ 38.00	$ 57.85	$ 9.58	$ 105.43	$ 57.00	$ 80.94	$ 13.79	$ 151.73
Survey Technician	$ 32.00	$ 48.71	$ 8.07	$ 88.78	$ 48.00	$ 68.16	$ 11.62	$ 127.78
Survey Aid	$ 26.00	$ 39.58	$ 6.56	$ 72.14	$ 39.00	$ 55.38	$ 9.44	$ 103.82
Drafter / CAD Operator II	$ 42.00	$ 63.94	$ 10.59	$ 116.53	$ 63.00	$ 89.46	$ 15.25	$ 167.71

Land Survey Office Technician	$ 46.00	$ 70.03	$ 11.60	$ 127.63	$ 69.00	$ 97.98	$ 16.70	$ 183.68
Cartographic Technician	$ 42.00	$ 63.94	$ 10.59	$ 116.53	$ 63.00	$ 89.46	$ 15.25	$ 167.71
GIS Technician	$ 48.00	$ 73.07	$ 12.11	$ 133.18	$ 72.00	$ 102.24	$ 17.42	$ 191.66
Clerical / Administration	$ 24.00	$ 36.54	$ 6.05	$ 66.59	$ 36.00	$ 51.12	$ 8.71	$ 95.83
GIS Analyst	$ 53.00	$ 80.68	$ 13.37	$ 147.05	$ 79.50	$ 112.89	$ 19.24	$ 211.63
WILLIAM COLISCH								
Survey Manager	-	-	-	-	NA	NA	NA	NA
Project Surveyor	$ 54.40	$ 87.03	$ 14.14	$ 155.57	NA	NA	NA	NA
Survey Party Chief	$ 43.02	$ 68.84	$ 11.19	$ 123.05	$ 50.44	$ 80.70	$ 13.11	$ 144.25
Survey Technician	$ 32.07	$ 51.31	$ 8.34	$ 91.71	$ 37.59	$ 60.15	$ 9.77	$ 107.51
Survey Aid	-	-	-	-	-	-	-	-
Drafter / CAD Operator II	-	-	-	-	-	-	-	-
Land Survey Office Technician	-	-	-	-	-	-	-	-
Cartographic Technician	-	-	-	-	-	-	-	-
GIS Technician	-	-	-	-	-	-	-	-
Clerical / Administration	-	-	-	-	-	-	-	-
GIS Analyst	-	-	-	-	-	-	-	-
PERIGEE								
Survey Manager	$ 48.91	$ 85.60	$ 12.23	$ 146.00	N/A	N/A	N/A	N/A
Project Surveyor	$ 39.83	$ 69.71	$ 9.96	$ 119.00	N/A	N/A	N/A	N/A
Survey Party Chief	$ 22.64	$ 39.63	$ 5.66	$ 67.00	$ 33.97	$ 47.55	$ 8.49	$ 90.00
Survey Technician	$ 20.58	$ 36.01	$ 5.14	$ 61.00	$ 30.87	$ 43.21	$ 7.72	$ 81.00
Survey Aid	$ 16.13	$ 28.23	$ 4.03	$ 48.00	$ 24.19	$ 33.87	$ 6.05	$ 64.00
Drafter / CAD Operator II	$ 22.33	$ 39.08	$ 5.58	$ 66.00	$ 33.49	$ 46.89	$ 8.37	$ 88.00
Land Survey Office Technician	$ 20.58	$ 36.01	$ 5.14	$ 61.00	$ 30.87	$ 43.21	$ 7.72	$ 81.00
Cartographic Technician	$ 27.65	$ 48.39	$ 6.91	$ 82.00	$ 41.48	$ 58.07	$ 10.37	$ 109.00
GIS Technician	$ 27.53	$ 48.18	$ 6.88	$ 82.00	$ 41.30	$ 57.82	$ 10.32	$ 109.00
Clerical / Administration	$ 22.45	$ 39.29	$ 5.61	$ 67.00	$ 33.68	$ 47.15	$ 8.42	$ 89.00
GIS Analyst	$ 39.92	$ 69.86	$ 9.98	$ 119.00	$ 59.88	$ 83.83	$ 14.97	$ 158.00
RUEN-YEAGER								
Survey Manager	$ 50.15	$ 79.05	$ 12.92	$ 142.12	NA	NA	NA	NA
Project Surveyor	$ 43.00	$ 67.79	$ 11.08	$ 121.88	NA	NA	NA	NA
Survey Party Chief	$ 28.98	$ 45.68	$ 7.47	$ 82.12	$ 43.46	$ 31.18	$ 7.47	$ 82.12
Survey Technician	$ 26.66	$ 42.02	$ 6.87	$ 75.55	$ 39.99	$ 28.69	$ 6.87	$ 75.55
Survey Aid	$ 25.50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
Drafter / CAD Operator II	$ 25.50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
Land Survey Office Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
Cartographic Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
GIS Technician	$ 30.13	$ 47.50	$ 7.76	$ 85.40	$ 45.20	$ 32.43	$ 7.76	$ 85.40
Clerical / Administration	$ 25.50	$ 40.20	$ 6.57	$ 72.26	$ 38.25	$ 27.44	$ 6.57	$ 72.26
GIS Analyst	$ 50.15	$ 79.05	$ 12.92	$ 142.12	NA	NA	NA	NA

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #5: EQUIPMENT

OFFICE LOCATION(S) (City, State)	**EQUIPMENT** (Indicate Quantity)											
	µ V8i license	µ V8i In-Roads license & Power InRoads license	TBC license's w/ current maintenance agreement	Data Collectors with Trimble Access w/ License Agreements (ALL TRIMBLE)	Dual frequency GPS RTK receiver pair (ALL TRIMBLE)	3" total station with long range reflectorless (ALL TRIMBLE)	Dual frequency GPS RTN receiver	Dual frequency GPS Static receiver (ALL TRIMBLE)	Resource Grade GPS Recievers	Trimble Pathfinder Office (Current)	PLS-CADD	ERSI ARCMAP 10.3
Vancouver, WA.	*unlimited +*	*unlimited +*	*5 **	*1 TSC3*	*1*	*1 Trimble S6*	*1 R8 GNSS*	*1 R8 GNSS 1 R7 GNSS*	*1 GEO XT*	*2 shared*	*1 shared*	*1 shared*
Lake Oswego, OR.	*unlimited +*	*unlimited +*	*5 **	*2 TSC3's, 2 TSC2'S*	*1*	*2 Trimble S6's*	*1 R8 1 R8 GNSS*	*1 R8 1 R8 GNSS 1 R7 GNSS*	*1 GEO-XT*	*2 shared*	*1 shared*	*1 shared*
Eugene, OR.	*unlimited +*	*unlimited +*	*5 **	*3 TSC3's, 2 TSC2'S*	*1*	*1 Trimble S8, 2 Trimble S6's*	*1 R8 2 R8 GNSS*	*1 R8 2 R8 GNSS 1 R7 GNSS*	*1 GEO XT*	*2 shared*	*1 shared*	*1 shared*
Medford, OR.	*unlimited +*	*unlimited +*	*5 **	*2 TSC3's, 2 TCS2's*	*1*	*2 Trimble S6's*	*1 R8 1 R8 GNSS*	*1 R8 1 R8 GNSS 1 5700*	*1 GEO-XH*	*2 shared*	*1 shared*	*1 shared*
				14 Total	*4 Total Pairs*	*7 Total*	*8 Total*	*12 Total*	*4 Total*			

+ - Our agreement with Bentley allows for an unlimited number of users
* - We have 5 licenses available on a first come basis that can be shared across all of our offices
** - Each of our trucks are equiped with tire chains and associated hand tools standard for field surveying

ADDITIONAL ITEMS

Bentley Descartes V8i	4x4 Truck w/ tire chains and winches	Digital Level	Scientific Calculator	Magnetic Locator(s)	Two-way radios	Chainsaw	Digital Camera	DOT/OSHA - approved safety equipment	Hand tools standard to field surveying	Computers and related software to support field Surveying	Oregon RTN (ORGN) Subscriptions	Washington RTN (WSRN) Subscriptions	Trimble RTN VRS NOW Subscriptions
unlimited +	*1*	*1 Trimble DiNi*	*1*	*1*	*1 set*	*1*	*1*	*For 1 person*	*1***	*1*	*5 shared*	*1 shared w backup*	*2 shared*
unlimited +	*1*	*1 Trimble DiNi*	*1*	*2*	*2 sets*	*1*	*1*	*For 2 persons*	*1***	*1*	*5 shared*	*1 shared w backup*	*2 shared*
unlimited +	*2*	*2 Trimble DiNi's*	*4*	*3*	*2 sets*	*2*	*2*	*For 4 persons*	*2***	*2*	*5 shared*	*1 shared w backup*	*2 shared*
unlimited +	*1*	*2 Sokkia SDL30's*	*2*	*2*	*2 sets*	*1*	*1*	*For 2 persons*	*1***	*2*	*5 shared*	*1 shared w backup*	*2 shared*

TECHNICAL/MANAGEMENT PROPOSAL

ITEM #6: LOCATION/GEOGRAPHICAL AREAS

NAME	PRIMARY OFFICE LOCATION (City, State)	PRIMARY LABOR CLASS. PER SOW	ALT. LABOR PER SOW CLASS	COMPETENT USER OF OF THE FOLLOWING: (1.µV8i, 2.µV8i In-Roads, 3.TBC, 4.Trimble Access, 5. OPUS Projects)
Andrew Plett, PLS	*Vancouver, WA.*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Bryan Doss	*Lake Oswego, OR.*	*Survey Party Chief*	*Survey Technician*	*1.,2.,3., and 4.*
Dylan Wike	*Lake Oswego, OR.*	*Survey Techinician*	*n/a*	
Jim Colton, PLS	*Eugene, OR.*	*Survey Manager*	*Project Surveyor*	*1.,2.,3.,4. and 5.*
Andrew Silbernagel, PLS	*Eugene, OR.*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Jason Endicott	*Eugene, OR.*	*Survey Party Chief*	*Survey Technician*	*1.,2.,3 and 4.*
Ruben Mendoza	*Eugene, OR.*	*Survey Party Chief*	*Survey Technician*	*1.,2.,3.,4. and 5.*
Yuka Garzenelli	*Eugene, OR.*	*Drafter/ CAD Operator II*	*Cartographic Techinican*	*1. and 2.*
Steve Wolfer	*Eugene, OR.*	*Drafter/ CAD Operator II*	*Cartographic Techinican*	*1. and 2.*
Serban Dinca	*Lake Oswego, OR.*	*Drafter/ CAD Operator II*	*Cartographic Techinican*	*1. and 2.*
Logan Miles, PLS	*Medford, OR.*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Erik Blake	*Medford, OR.*	*Survey Technician*	*Drafter/ CAD Operator II*	*1.,2.,3., and 4.*
Steven Sprague, PLS	*Sandpoint, ID*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Steven Binnall, PLS	*Sandpoint, ID*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Don Crawford	*Sandpoint, ID*	*Survey Party Chief*	*Survey Technician*	*1.,2.,3.,4. and 5.*
Bruce Clark	*Sandpoint, ID*	*Land Survey Office Technician*	*Survey Technician*	*1. and 2.*
Art Colunga	*Portland, OR*	*Survey Party Chief*	*Survey Technician*	*1. and 2.*
Ed Alcantar	*Portland, OR*	*Survey Technician*	*n/a*	*1. and 2.*
William Colisch, PLS	*Grants Pass, OR*	*Project Surveyor*	*Survey Party Chief*	*3. and 4.*
Keith Colisch	*Grants Pass, OR*	*Survey Party Chief*	*Survey Technician*	*3. and 4.*
Tyler Sweet, PLS	*Bellevue, WA*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Scott Edwards, PLS	*Bellevue, WA*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Mark Byrd, PLS	*Salt Lake City, UT*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*
Marshall Byrd, PLS	*Salt Lake City, UT*	*Project Surveyor*	*Survey Party Chief*	*1.,2.,3.,4. and 5.*

RFO 3553 AMENDMENT 001
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 11, 2015

The purpose of this modification is to revise the Instruction to Offerors, Attachment 001 and incorporate submitted contractor clarification questions and BPA responses.

A. Revise Instruction to Offerors, Submission of Offers as follows:

All offers shall be sent via email by January 4, 2016, no later than 3:00 PM to Kristi Carter at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov. No communication is authorized between the contractor and Bonneville Power representatives or employees other than the Contracting Officer's Representative, Tracey Albright, and the Contracting Officer's Assistant, Kristi Carter. Clarification questions may be submitted via email to Kristi Cater at kmcarter@bpa.gov and Tracey Albright at taalbright@bpa.gov no later than December 21, 2015, 3:00 p.m. PDT. Answers to clarification questions will be posted as an amendment to the solicitation via email to all potential offerors. If you decide not to submit an offer, it is requested that you contact Kristi Carter and Tracey Albright.

B. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 8 SUBCONTRACTING PLAN, as follows:

Provide an estimated dollar amount or percentage of work that may be awarded to subcontractors who are one of the supplier diversity program categories, or (2) a statement, with supporting reasons, that the nature of the contract does not offer subcontracting possibilities; state which disciplines would be performed in-house by your company and which may be assigned to subcontractors, if any. Identify qualifications of all subcontractors proposed, company name and key personnel. (Note: A detailed Subcontracting Plan may be required at time of award if applicable.

C. Revise Attachment 001 INSTRUCTION TO OFFERORS & EVALUATION PROCESS, INSTRUCTION TO OFFERORS – COMPETITIVE ACQUISITIONS (11-2), PARAGRAPH 2 TECHNICAL/MANAGEMENT (NON-PRICE/COST) PROPOSAL, 4 PAST PERFORMANCE A, as follows:

BPA focuses on information that demonstrates quality of performance relative to the complexity of the procurement under consideration. The offeror's references will assist BPA in collecting this information. References other than those identified by the offeror may be used by BPA. All such information may be used in the evaluation of the offeror's past performance.

D. Incorporate the following submitted contractor clarification questions, and BPA responses.

CONTRACTOR QUESTION #1: The subcontracting information on Attachment 1, page 6 appears to conflict with the instructions on Attachment 1, page 5: (page 6), please advise of the requirement.

BPA RESPONSE: See Item B in Amendment 001.

CONTRACTOR QUESTION #2: Attachment 1, page 5, item (4) Past Performance – requires the use of the "attached" Past Performance Reference Form. However, the form is not attached. Could you direct me to the correct form?

BPA RESPONSE: Refer to Item C in Amendment 001.

CONTRACTOR QUESTION #3: Is it permitted to use BPA projects and references/personnel on the Past Performance section/form? Or should all of the Past Performance project be from non-BPA clients?

BPA RESPONSE: BPA references are acceptable.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: OBEC Consulting Engineers
Signature (by person authorized to sign): (b) (6)
Date signed: December 30, 2015

RFO 3553 AMENDMENT 002
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: December 30, 2015

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. The offer due date has been extended to January 11, 2016 at 3:00 PM.

B. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: Under Professional Qualifications – Item 1 references the person in responsible charge but also references the resumes of key personnel and states recent projects that they have overseen. Does this include Project Managers and Project Surveyors only or does it also include other key personnel that have managed key portions of a project?

BPA RESPONSE: Yes, Key Personnel are those individuals filling positions that oversee the whole project and/or specialized tasks of the project: Survey Managers, Project Surveyors, PLS's/RLS's, Survey Party Chiefs, and Land Survey Office Technicians.

CONTRACTOR QUESTION #2: Are examples of past projects desired or not?

BPA RESPONSE: Yes, the resumes should refer to past projects to address size, scope, and responsibilities and convey the Key individual's experience.

CONTRACTOR QUESTION #3: Does BPA have a preference of the type of electronic files (PDF, Word, etc) to be submitted? Is there a limit to file size?

BPA RESPONSE: The vendor can submit their responses to the RFO in either a PDF or Word format. The RFO 3553 Business Workbook and Technical Workbook shall be submitted in both the native Excel format and a PDF copy. The BPA email system has a limit of 10 mb's.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: OBEC Consulting Engineers
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: December 30, 2015

RFO 3553 AMENDMENT 003
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 4, 2016

The purpose of this amendment is to extend the offer due date and incorporate submitted contractor clarification questions and BPA responses.

A. **The offer due date has been extended to <u>January 18, 2016 at 3:00 PM.</u>**

B. **Incorporate the following submitted contractor clarification questions and BPA responses.**

CONTRACTOR QUESTION #1: Are we to add specialized equipment rates – i.e., ATV's, boats, UAV's, scanners, etc. – to the Business Workbook or leave them out altogether?

BPA RESPONSE: ATV's are a common specialized equipment that are regularly required to perform BPA work and can be added to the Business Workbook spreadsheet. All other specialized equipment will be priced out on an as needed basis at the time of a contract release or work assignment.

CONTRACTOR QUESTION #2: Is the selection panel the same for the RFO solicitation as it was for the SOQ solicitation?

BPA RESPONSE: The evaluation team is the same for the RFO as was for the RFQ, but the selection by the Contracting Officer, or Contracting Office, is based on evaluation team recommendations.

CONTRACTOR QUESTION #3: Can we add the requested equipment brand names and model numbers to the provided spreadsheet or would you like a separate spreadsheet with this information?

BPA RESPONSE: Yes, manufacture names and model names/models can be included in the Technical Workbook / Equipment worksheet for survey field equipment.

CONTRACTOR QUESTION #4: Please clarify under Technical Approach bullet one, is an "existing heavily wooded Substation Parcel" an existing substation to be expanded or just and existing parcel for a new substation?

BPA RESPONSE: This task should be interpreted as a Boundary and Topographic Survey for an expansion of an existing BPA substation on to an adjacent heavily wooded BPA fee owned parcel that is not physically delineated and monumented.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name OBEC Consulting Engineers

Signature (by person authorized to sign): (b) (6)

Date signed: January 6, 2016

RFO 3553 AMENDMENT 004
BONNEVILLE POWER ADMINISTRATION
PROFESSIONAL SURVEY & MAPPING SERVICES

Date: January 12, 2016

The purpose of this amendment is to incorporate a submitted contractor clarification question and BPA's response.

A. Incorporate the following submitted contractor clarification questions and BPA responses.

CONTRACTOR QUESTION #1: We anticipate that allowing more than one pricing sheet will provide positive pricing for BPA by using subcontractors that are closer to work in some of your service areas. Will BPA accept different pricing workbooks, to reflect ours and our subs information, or do we need to develop one set of rates that will work for our entire team (prime and subcontractors)?

BPA RESPONSE: Vendors should only submit what has been requested in the "Instruction to Offerors" section of RFO 3553, but we can accept the submittal of additional Technical and Business Workbooks for subcontractors/partners. Each Prime Vendor must still have meet the Personnel requirements set out in the RFO without including subcontracting staff.

At a minimum, a core team comprised of the following personnel is to be available for BPA projects.

- Three Professional/Registered Land Surveyors licensed in one of the primary states within BPA's service area (Montana, Oregon, Idaho, & Washington) to act in a project surveyor and/or professional capacity. Each core team having licensees/registrants in two states within BPA's primary service area: Montana, Oregon, Idaho, & Washington.

- Two survey field crews: a two-person and a three person crew that can also act in the capacity of an office resource in assisting the PLS/RLS in research and processing/adjusting survey field data.

- Three survey office technicians for processing field data, creating reports, and CAD survey mapping duties; creating/updating survey and plan/profile maps.

- One staff member that is NGS OPUS-Projects certified.

ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME.

Acknowledge receipt of this Revision by completing the following information and returning this form with the proposal. Failure to provide this acknowledgement may affect BPA's evaluation of your firm's offer.

Company Name: OBEC Consulting Engineers
Signature (by person authorized to sign): (b) (6) [redacted]
Date signed: January 12, 2016