

REQUEST FOR PROPOSAL AIRBORNE GEOPHYSICAL SURVEY IN SIOUX FALLS, SOUTH DAKOTA

The City of Sioux Falls and the United States Geographical Survey are coordinating and cooperating on this survey to explore and produce high quality images of subsurface hydrologic conditions and groundwater occurrence. They are requesting proposals from qualified professional consultants for this survey. The requested data set is to be used for geological and hydrological framework studies of the area investigated. The data collected shall be of such quality that they can be calibrated and inverted.

STATEMENT OF WORK

The City of Sioux Falls, South Dakota, (the City) requests a proposal for an airborne geophysical survey of a shallow glacial aquifer (Big Sioux aquifer) in Sioux Falls, South Dakota, using airborne electromagnetic (EM) and magnetic methods. These data are intended for 1-D and 2-D numerical inversion to determine the 3-D extent of groundwater recharge zones and subsurface aquatard boundaries (silty glacial tills) within the study area. These data will be used to create a geological framework to be input into a regional assessment of a glacial characterization and groundwater model of the Big Sioux aquifer. The City requires platform(s) that are well suited for near surface investigations and have the capability for logging electromagnetic and magnetic data. The data must be well calibrated and corrected for any system response and drift.

The location of the ground water study area and proposed airborne survey area, as well as demographic characteristics (powerlines and population centers), are shown in Figure 1, below. This image can be provided as a GoogleEarth file upon request. The study (black outline) includes the city of Sioux Falls and other population centers. Accordingly, a suggested primary airborne survey area is shown (red outline) of a smaller area (approximately 6 x 20 km) that excludes some major populated areas. A secondary airborne survey area is shown (blue outline) over the airport area (approximately 6 x 4.5 km). Coordinates (WGS84, UTM 14N) for the approximate survey areas are:

Primary flight area:

Longitude	Latitude	UTM_E	UTM_N
-96.772110°	43.782455°	679452.67 m	4850213.50 m
-96.695832°	43.601756°	685599.65 m	4830116.50 m

Secondary flight area:

Longitude	Latitude	UTM_E	UTM_N
-96.776525°	43.601756°	679506.17 m	4830116.50 m
-96.701819°	43.563331°	685540.96 m	4825856.89 m

The recommended flight line spacing for the surveys is 200 meters (approximately 1/8 mile or 660 feet). This would be approximately 580 line-kilometers to cover the primary survey area. **The proposal shall include a specific flight plan (lines) for the primary and secondary survey areas and the total number of line-km.** It is expected that proposed flight line location will need to be modified from a regular grid to accommodate no data areas over and near power lines, and to avoid dwellings and populated areas. **The proposal shall discuss how powerline noise affects EM data acquisition and quality.**

The target aquifer has been described by Rothrock and Otton (Ground Water Resources of the Sioux Falls Area, South Dakota, State of South Dakota Report of Investigations no. 56, 1947, 126 p.; url: http://www.sddenr.net/publist/search_results_publist.cfm?limit_to_download=Yes&sql_option=18). The report gives interpretive geologic cross-sections for the Big Sioux aquifer based on drilling.

The US Geological Survey performed dc resistivity along 5 profiles in April of 2015 to evaluate electrical contrasts between the Big Sioux aquifer and the glacial till that underlies it, and variations within the silty sands and gravels. The profile map locations and their spatial location near the geologic sections are shown in Figure 2 which is modified from Figure 9 of Rothrock and Otton (1947). A generalized geophysical model consists of a sporadically occurring shallow soil/silt layer that has a low resistivity of 10 to 20 ohm-meters. The Big Sioux aquifer is typified by a unit with 30 to 70 ohm-meters resistivity, perhaps greater in some areas. The thickness from the soundings and drilling ranges from a few to 15 meters (Figure 2). Underlying the aquifer is glacial till that is generally less than 10 ohm-meters. The Sioux Quartzite underlies the glacial till and is shallowest in the northern part of the survey area. From other studies, the electrical resistivity of the quartzite is quite high (perhaps 1000's of ohm-meters). **The proposal shall discuss the resolution of this layered model of the Big Sioux Aquifer by the geophysical system proposed.**

The Consultant shall furnish all labor, materials, and facilities, except as otherwise specified herein, required for conducting geophysical surveys in Sioux Falls, South Dakota. The consultant shall provide digitally recorded and processed data in accordance with the terms, conditions and specifications set forth in this contract. **The proposal shall state deliverable products. An example of recently flown data shall be submitted with the proposal.** Previous work must include experience in airborne groundwater aquifer exploration.

In all cases of emergency during the course of this project if the City Project Manager is not available, the Consultant may contact the designated scientist-in-charge.

Mobilization and demobilization costs for equipment shall be based on shipment from the vendor's location to Sioux Falls, South Dakota. The particulars of the base shipping

address and the local shipping office in Rapid City, South Dakota will be provided upon award of the contract. Mobilization and demobilization costs of survey crew personnel should be based on commercial airline transport from the vendor's location to Sioux Falls, South Dakota.

The goal of this survey is to provide high quality data that will produce images of the subsurface. This data set is to be used for geological and hydrological framework studies of the area investigated. This data set is to be used for geological and hydrological framework studies of the area investigated. The data collected shall be of such quality that they can be calibrated and inverted. An example of the inverted data shall be provided with the proposals.



Figure 1. Index map for project from GoogleEarth (file: Big Sioux Aquifer Study area v5.kmz")

EXPLANATION:

- Black polygon – Groundwater study area
- Red polygon – Primary flight area
- Blue polygon – Secondary flight area
- White polygons – Communities
- White line – Railroad tracks
- Light green lines – Power lines

File: Big Sioux Aquifer Study area v5.kmz

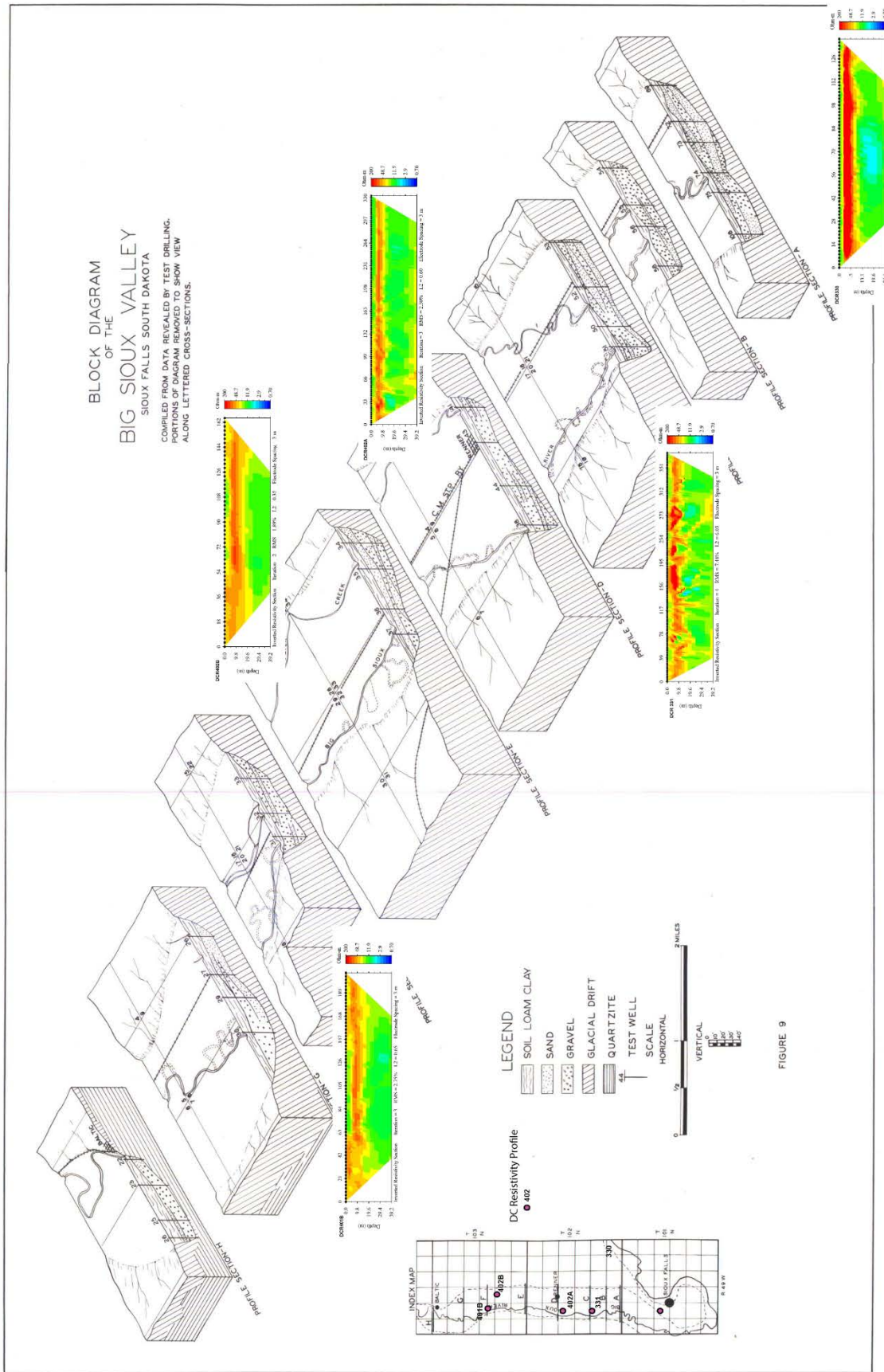


Figure 2. Conceptual Geologic sections with dc resistivity profiles. Adapted from Figure 9 (Rothrock and Otton, 1947). Profile locations relative to sections are approximate. (file: "RI-056 -conceptual sections with dc.pdf" available upon request)

A-1. AREA TO BE FLOWN:

NOTE: Any variations from the required specifications listed below shall be discussed in the proposal along with their anticipated effect on survey results.

The location of the ground water study area and proposed airborne survey area, as well as demographic characteristics (power lines and population centers), are shown in Figure 1. This image is also provided as a GoogleEarth file ("Big Sioux Aquifer Study Area v5.kmz"). The study (black outline) includes the city of Sioux Falls and other population centers. Accordingly, a suggested primary airborne survey area is shown (red outline) of a smaller area (approximately 6 x 20 km) that excludes some major populated areas. A secondary airborne survey area is shown (blue outline) over the airport area (approximately 6 x 4.5 km). Coordinates (WGS84, UTM 14N) for the approximate survey areas are:

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A-2. SURVEY LOGISTICS

a) Electromagnetic (EM) Test Line

In advance or immediately prior to the survey, the system will be flown in both directions at typical production speeds at three (3) altitudes (20 m, 30 m, and 50 m) over a test line in the survey area that will be designated prior to field mobilization. The test line should include altitude zero checks as done in production flying. The data will be evaluated for compliance with system specifications given in the flight specifications section, below, by the Consultant and the designated scientist-in-charge.

To the extent possible, system parameters shall then be optimized before routine surveying is started. Where prior ground truth information has been obtained, the City reserves the right to utilize this data to validate the calibration of the airborne system on the test line. Layered-earth models from the ground truth data will be used by the City to generate the forward response, upward continued to the specific flight altitude, using the specifications of the airborne system. The specifications for the specific system that will be used in the survey will be supplied to the City at least one (1) month in advance of the test flight (system

geometry, frequencies, system filters, and typical noise levels per below). A comparison between measured data and the upward-continued responses shall be made by the City within 24 hours and prior to initiation of the main survey. The measured data and upward-continued responses must agree to within 25%, or another level to be mutually agreed upon in writing by all parties, at each frequency in order to proceed.

- b) The Consultant shall provide the necessary personnel, geophysical equipment, and the platform to perform the survey.

Survey Personnel: At a minimum the Consultant will provide an experienced pilot, a geophysical equipment operator who will monitor the equipment at all times during data acquisition, and a project geophysicist, who will be responsible for preliminary processing of data in the field.

Field Workstation: The Consultant shall bring to the field a computer workstation capable of processing and displaying collected geophysical data to determine data quality, calculating and displaying navigational information including flight-line maps and copying and verifying digital data.

- c) Communication in planning and executing flight operations:

The City will provide a contact point for daily coordination of flight operation in order to advise local residents of the flight operation area. The City contact will also provide information about sensitive areas for flight operations such as areas of closely confined livestock.

The consultant will provide contact information for onsite communications with flight operations.

A-3. FLIGHT SPECIFICATIONS

- a) Flight speed: The nominal airspeed and data recording rate shall be specified in the proposal and discussed in terms of ground sampling interval.
- b) Data Recording Rate: This shall be specified in order to achieve along-line data density sufficient to map the aquifer with high-resolution.
- c) Sensor height: Nominally 30 meters. The platform height above ground shall be specified, along with platform-sensor separation.
- d) Flight Line Spacing: Flight lines shall have a nominal line spacing of 200 meters (listed in Table 1). If the spacing between survey lines exceeds 25% of the specified line spacing for more than 800 meters (0.5 mile), a fill-in line shall be flown at the Consultant's expense. However, if the flight-line spacing deviation is

caused by a safety requirement, the Consultant is not required to fly a fill-in line. The Consultant will document the time and location when flight line deviations are due to safety concerns.

- e) System response: The proposal shall describe procedures for monitoring and recording system response during flight operations in order to adequately account for system drift.
- f) Raw flight data: These are to be compiled at the end of each day and examined by the Contactor who will perform quality control. The data are to be delivered the following morning. The data shall be delivered in a Geosoft database format with Datum WGS84, Local datum transform WGS84 World, and UTM Projection. The City will perform independent quality assurance audit.
- g) Space weather: Airborne survey data shall not be acceptable when gathered during magnetic storms, or short term disturbances of magnetic activity at the ground station. The proposal shall define the criteria and thresholds to be used on rates-of-change, and pulsation periods and amplitudes

The proposal shall discuss the merits and possible disadvantages of these survey parameters as well as any considerations which would require the modification of these specifications.

A-4. DATA ACQUISITION SPECIFICATIONS

- a) Altimetry – The proposal shall describe the method(s) of recording the ground clearance of the platform and sensors (e.g., using radar, laser, barometric, for example). The altimetry data shall be complete; any malfunction shall require re-flying the line(s). The absolute accuracy of the radar altimeter over flat terrain shall be specified by the Consultant and shall become a requirement. The methods used to calibrate the altimeter(s) shall be specified and described in the final report. The altimeter(s) shall be certified under FAA regulations.
- b) Positioning –Differential GPS with GPS receivers on platform and sensor shall be used. The accuracy shall be specified in the proposal
- c) Sensor Attitude – The proposal shall describe the method(s) of recording the attitude (roll, pitch, and yaw) of the sensor frame attitude.
- d) Electromagnetic System – An active-source electromagnetic (EM) system shall be used.

If a Frequency-domain EM (FEM) system is proposed, Consultant shall specify specific nominal frequencies, intercoil spacings, and coil moments. The exact frequencies; intercoil spacings and configuration; transmitter moment; receiver

moment; bucking coil moment; noise level; and drift rate shall be specified by the Consultant and become a requirement of the contract. The in-flight noise level shall be specified at each frequency and will become required performance levels.

If a Time-domain EM (TEM) system is proposed, it must have selectable repetition rates and pulse widths. The proposal shall state the pulse and sample characteristics of the system, and the means of recording each time gate, and binning methods.

For both FEM and TEM systems, static and in-flight system noise levels over a specified averaging-time shall be specified assuming that sferics levels are typical for morning hours. The specified noise levels shall become a requirement. Measurements of static noise levels and in-flight noise level at altitude shall be made before the survey, as well as at the beginning and end of each flight. Spherics, power line, and general system noise shall be monitored and recorded and included as part of the data deliverables.

The manner of calibration and the method of verifying drift in the EM system shall be specified and will become a requirement. All calibration procedures shall be stated, shall become a requirement, and be included in the deliverables. A detailed description of all calibration procedures shall be included in the final report as well as delivered the morning after each day's data acquisition. It is required that calibrations and post-processing produce data that can be used to invert for subsurface electrical structure using state-of-the-art EM inversion and imaging techniques.

System drift due to mechanical and electronic changes between consecutive zero level measurements of the system shall be specified and become a requirement. The zero-level shall be checked at periodic intervals during surveying when the EM sensor is at altitude outside of ground effect. The proposal shall discuss how often the drift check will be made, and its effect on data quality. The proposed drift check shall become a requirement.

- e) Airborne Magnetometer – The proposal shall specify sensor type, sample rate, sensitivity, noise, and compensation methods for the airborne magnetometer. The location of the magnetometer shall be specified (e.g., bird, platform). Aeromagnetic data shall not be acceptable when gathered during magnetic storms or short-term disturbances from human-caused magnetic activity at the ground-based station(s).
- f) Diurnal Magnetometer – One or more continuously recording ground-based magnetometers shall be located within 50 miles (80 km) of all survey points.

A total intensity magnetometer shall be used to monitor diurnal variations. A single location away from cultural interferences will be designated. The accuracy,

resolution, sample rate, precision of synchronization to the aircraft data acquisition system, and maximum allowable anthropogenic noise level shall be specified and become a requirement. The data shall include the date and GPS time.

- g) Data Acquisition/Recording System – The sensor and positional data shall be recorded using a digital data acquisition system. The proposal shall specify the sample rate for all data channels, and identify all recorded data channels, and other recorded parameters that the Consultant deems necessary for satisfactory quantitative processing, inversion, and interpretation of the sensor data. In addition to these geophysical channels, navigational information including flight line, flight number, time, position, fiducials, altimeter readings, and any other information required for data processing and interpretation shall also be recorded. Specified data channels shall become a requirement of the contract.
- h) Flight Path Recovery – A real-time, high-resolution, differential GPS system shall be used for navigation and positioning. The performance of the proposed system shall be described. The flight path of both the helicopter and bird shall be recorded.

A color digital camera shall be used to record the terrain passing beneath the platform. Time and fiducial marks shall be superimposed on the video recording or digital pictures to allow direct correlation of the flight path with the digitally recorded geophysical data. In level flight, the viewing angle of the camera shall not be more than 2 degrees from vertical.

The proposal shall discuss the merits and possible disadvantages of these data acquisition parameters as well as any considerations which would require the modification of these specifications.

A-5. DATA REDUCTION/PROCESSING SPECIFICATIONS

- a) Flight Path Recovery – The flight path shall be derived from the recorded electronic navigation data. The recorded navigation data shall be used to compute UTM locations using the specified datum.
 - a. A lag correction will be applied to the navigation data in order to properly determine the EM system coordinates. The Consultant shall clearly specify the method of determining and applying the lag corrections.
- b) EM Data –All EM data will be digitally pre-processed to remove noise due to sferics events, filtered to reduce any system noise, and leveled to correct signal levels for altitude variations. Following pre-processing, high quality apparent-resistivity databases will be produced by a qualified geophysicist to be included as a deliverable. Detailed processing procedures shall be presented in the

proposal and shall become a requirement. A detailed description of all processing methods employed shall be included in the final report.

- c) Magnetic data – The total field airborne magnetometer data shall be corrected for diurnal variation and instrument drift, and compensated for platform noise. The residual magnetic data shall be determined by removing the International Geomagnetic Reference Field: IGRF-12 (<http://www.ngdc.noaa.gov/AGA/vmod/igrf.html>). IGRF values shall be computed by using magnetometer sensor elevations at the observed data points. Corrections shall be shown in the deliverable data set and documented in the final report.

A-6. DEPTH SECTION SPECIFICATIONS

The proposal shall present details on the methods for calculating electrical depth sections. Depth section results shall be compiled into a Geosoft Oasis montaj database “GDB”.

A-7. QUALITY CONTROL

- a) A formal quality control program by the Consultant is required under this contract. Data quality control procedures shall, at a minimum, meet normal industry standards. The Consultant, as part of their quality control procedures, shall be responsible for adjustment and calibration of their equipment, operation to meet specifications, and maintaining quality control of processing and interpretational procedures applied to the data. All quality control procedures and results shall be documented.
- b) All geophysical and navigational equipment shall be checked, adjusted, and calibrated according to manufacturer’s recommendations immediately before commencing data acquisition or within the time period specified by the manufacturer.
- c) The analog portion of the data acquisition system shall be calibrated by injecting known signals from a standard source and recording and recovering the output.
- d) The proposal shall present details on procedures that will be taken to calibrate electromagnetic system. Documentation of these procedures shall be provided in the final report.
- e) All data processing steps, models, and assumptions that correct, transform, alter, or change data in any way shall be described in detail and included as part of the final report. See Section Section A-4 (d) above for additional report requirements.

A-8. DIGITAL DATA SPECIFICATIONS SUMMARY

- a) All digital data shall be delivered in a standard format compatible with Geosoft Oasis montaj on CD-ROM or DVD-ROM depending on the size of the data sets.
- b) Each CD-ROM or DVD-ROM supplied shall have a unique visual label attached to allow correlation with supplied descriptive material of its contents, including delivery date.
- c) The digital data shall not introduce noise beyond the noise specifications of the instrument supplying the data (e.g., the airborne magnetometer).
- d) If any digital CD-ROM or DVD-ROM supplied conforming with the contracted characteristics cannot be read by the City's computer, additional copies of CD-ROMs or DVD-ROMs shall be supplied at no extra cost until a completely successful reading of the data is performed.
- e) Each CD-ROM or DVD-ROM delivered shall contain a Readme file for each data set listing and describing in detail the channel headers for the data.

A-9. DELIVERABLE ITEMS

The Consultant shall furnish the following data for each geophysical system to the F.O.B. destination:

Raw unprocessed data: e.g., uncorrected receiver coil/loop data (data as they come out of the amplifiers), A/D corrected and converted to ppm or nV/m² by removing the bucking coil or system response; airborne and ground-based magnetometer data.

Minimally processed data. These are data that have been corrected based on the system response/internal calibration check. Data have been corrected for bias response and have been stacked/averaged into discrete soundings. Lag correction is applied to the coordinates at this step. No data leveling or smoothing is applied.

Fully processed data. These are data that have been further smoothed and/or leveled.

Advanced data processing. These are data that have been inverted to produce resistivity depth sections. To be accepted the inversions must match the geophysical ground truth (i.e., inverted dc resistivity transect) data that will be provided to the vendor after award of the contract.

Data processing must be fully documented in the final report for each system including the type and widths of averaging filters as part of a detailed description of all processing methods applied to the data. Transparency of the analysis for each system is required.

Deliverable items shall include:

- a) All acquired airborne and ground-based data.
- b) All videotape or digital camera recordings and the original of all written or recorded electronic navigation information that was used to position the track of the aircraft, if collected. Original copies of all digital data recorded during the survey.
- c) Two (2) copies of digital data on DVD(s)/flash storage that shall contain:
 - (i) The original (raw) recorded flight line data including turns and zero ground-effect maneuvers and the final completely reduced and corrected data. A "README" file describing each of the channels and data shall be included. The format for these records shall be in Geosoft ASCII "XYZ" format with channel headers, and space- or comma-delimited fields. The proposal shall specify the field names to be included.
 - (ii) The final, completely reduced, leveled, and corrected data. A readme file describing each of the channels and data shall be included. The format for these records shall be in Geosoft ASCII "XYZ" format with channel headers, and space- or comma-delimited fields. The proposal shall specify the field names to be included.
 - (iii) An ASCII "README.TXT" file shall contain survey metadata. The proposal shall specify the metadata information to be included.
 - (iv) A copy of the project report (excluding any photocopies of flight logs, company profiles, equipment literature, etc.) in MS Word 2003 or later.
- d) A partial listing (e.g., header with 3 records) of each data file shall be provided. Channel names in the header shall be described.
- e) Two (2) hard copies of the Consultant's Operational Report.

SPECIAL TERMS AND CONDITIONS

A-10. INSPECTION AND ACCEPTANCE

- a) Before mobilization, the scientist-in-charge shall be given a copy of the flight plan including the preplanned flight surface, if applicable, for discussion and approval. The City reserves the right to observe the Consultant in the field during survey data acquisition and reduction procedures or to visit the Consultant at the Consultant's place of business to ascertain that proper procedures are being employed in compiling the data. Any data processing or field techniques that are deemed proprietary by the Consultant will be maintained proprietary by the City inspector(s).
- b) During the course of the survey, the flight crew will maintain contact with the City Project Manager. The preliminary data shall be delivered to the Project Manager

and the designated project scientist-in-charge daily, either on-site or via overnight mail, e-mail, or computer network to an FTP site.

- c) Preliminary digital flight-line data, base station magnetics, and radar altimeter data shall be submitted at the time the flying is completed; either on-site or via overnight mail, e-mail, or computer network to an FTP site. This review will take no longer than 24 hours after the Project Manager and the designated project scientist-in-charge receives the data. Revised preliminary digital data shall be submitted within thirty (30) days after the completion of flying. The City will conduct its review of the revised set of the digital data within fourteen (14) calendar days after receipt of the above described revised data. (See Section A-13 below for completion time.)
- d) If the City's review exceeds the seven (7) day period referenced in Item (c) above, the contract delivery date shall be automatically extended one (1) day for each day of delay caused by the City's review.
- e) The Consultant shall then have seven (7) days to correct all errors or problems the City may have found in its review of preliminary data (Item (c) above) and submit all final deliverables for each individual survey as listed in Section A-9 above, to the address in Section A-12 below.
- f) With the submittal of all final deliverables as listed in Section A-9 above, the Consultant shall have met all criteria as specified herein and shall have made all corrections required resulting from the City. The City reserves the right to review again the deliverables for compliance prior to acceptance by the Contracting Officer. Until final acceptance, deliverables may be returned to the Consultant for compliance with corrections listed during the City's review in Items (c), (d), and (e) above.

A-11. PRESERVATION, PACKAGING, PACKING, AND MARKING

Preservation, packing, packaging, and marking for shipment of deliverable items called for by the contract shall be in accordance with the best commercial practice to assure acceptance by common carrier at the most economical rate(s).

Packages containing magnetic media shall be marked on external containers with a notice reading substantially as follows: "CAUTION: SOFTWARE/MAGNETIC MEDIA ENCLOSED. DO NOT EXPOSE TO HEAT OR MAGNETIC FIELDS."

A-12. PLACE AND METHOD OF DELIVERY

- (a) The delivery points for the supplies and services shall be to the City of Sioux Falls.
- (b) Prices to be F.O.B. Destination (Free on Board destination)

A-13. CONTRACT DELIVERY TERMS

Deliveries under this contract shall be in accordance with the following:

(a) Flying dates to be completed in 2015 and will be negotiated after selection

FLIGHT OPERATIONS SHALL BEGIN WITHIN THIRTY (30) CALENDAR DAYS FOLLOWING THE DATE OF THE CONSULTANT'S RECEIPT OF THE CONTRACT AND BE COMPLETED WITHIN SIXTY (60) CALENDAR DAYS AFTER FLYING HAS COMMENCED.

(b) Preliminary Copies

Preliminary digital flight-line data and/or grids shall be submitted at the time the flying is completed for the survey area (see Section A-10, (c), above). Revised preliminary digital data sets shall be submitted within thirty (30) calendar days after flying for each area is completed.

(c) Final Deliverables

The Consultant shall complete the requirement to make all required corrections, and submit all final deliverables to the points of acceptance by the Contracting Officer in accordance with the following schedule:

ALL FINAL PRODUCTS SHALL BE DELIVERED WITHIN THIRTY (30) CALENDAR DAYS AFTER FLYING IS COMPLETED FOR ALL AREAS AND DEMOBILIZATION HAS TAKEN PLACE.

A-14. SPECIAL CONTRACT REQUIREMENTS

(a) Indemnity

The Consultant herein is an "independent consultant" and shall obtain all necessary insurance to protect him/her from liability arising out of this contract.

Insurance shall be obtained by the Consultant for all persons and aircraft involved. The Consultant hereby agrees to indemnify and hold the City harmless in connection with, any loss or liability from damage to, or destruction of, or from injuries to, or death of, persons (including the agents and employees of both parties) if such damage, destruction, injury or death arises out of, or is caused by performance of work under this contract, unless such damage, destruction, injury or death is caused solely by the active negligence of the City, its agents or employees. The Consultant agrees to include this clause, appropriately modified, in all subcontracts to be performed under this contract. If property (instruments) are damaged or destroyed, the Consultant should consult and file a claim with their insurer.

A certificate or insurance company statement showing the "Consultant" holds liability insurance shall be included with the proposal.

(b) Permits and Licenses -- General

In the performance of work hereunder, the Consultant shall obtain and maintain in effect all necessary permits, visas, and licenses required by Federal, State, or local government, or subdivision thereof, or of any other duly constituted public authority in and out of the U.S. At no separate or additional cost to the City, the Consultant shall comply with all laws and regulations applicable to work to be performed hereunder, including any revised statutes or regulations effective during the life of the contract.

(c) Applicable Regulations and Permits -- Aircraft Operations

(1) All aircraft used in the performance of the work under this contract shall be maintained and operated in accordance with all applicable laws in and out of the U.S. as well as the required Department of Transportation, Federal Aviation Administration (FAA) regulations, including Title 14, Code of Federal Regulations Part 375 entitled, "Navigation of Foreign Civil Aircraft within the United States," published 3/3/86. Additional or separate charges may not be made under this contract for compliance with FAA regulations, including any revisions made since 1986 and during the life of the contract.

Certificates of airworthiness for the proposed aircraft shall be included in the proposal.

(2) When the project falls under controlled air space, the Consultant shall contact the appropriate Air Route Traffic Control Center.

(3) If the project area includes all or part of a military installation or other classified area, the Consultant must comply with all security regulations associated with taking, reproducing, or distributing photographs of these facilities, and must satisfy Department of Defense (DOD) security requirements specified in DOD 5220.22M, "Industrial Security Manual for Safeguarding Classified Information." The Consultant may be required to visit the installation to obtain necessary clearance from the military commander. Difficulty obtaining the necessary clearance should be reported to the Contracting Officer Immediately. All photographic materials resulting from photography of classified areas shall be handled, stored, and shipped in accordance with security regulations.

CONSULTANTS SHOULD ALSO INCLUDE THE BELOW INFORMATION WITH THEIR PROPOSAL.

SUPPLIES/SERVICES AND PRICES

<u>Item No.</u>		<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Amount</u>
1.	Mobilization/Demobilization	1 job	1 job	\$_____
2.	Primary Airborne Survey (no stand-by-budgeted, test line included)	___ line-km(a)	\$_____	\$_____
3.	Primary Airborne Survey (with stand-by-budgeted, test line included)	___ line-km(a)	\$_____	\$_____
4.	Secondary Airborne Survey (no stand-by-budgeted, test line included)	___ line-km(a)	\$_____	\$_____
5.	Secondary Airborne Survey (with stand-by-budgeted, test line included)	___ line-km(a)	\$_____	\$_____
6.	Stand-by Days	per Occurrence	\$_____	\$_____
		(maximum amount to be determined)		
7.	Optional processing to produce resistivity depth sections Product to be described in contract proposal		\$_____	\$_____

(a) Line-km to be estimated in the proposal to include the survey (flight) area and test line described in the statement of work below

The quantity "Survey Days" begins after mobilization is complete and includes both production and stand-by days.

The City of Sioux Falls, South Dakota (the City) has a definite requirement for and plans to award a contract for an airborne geophysical survey over the Big Sioux aquifer, north of Sioux Falls, South Dakota. All survey operations must be completed within 60 days. Optional "add-on" line km may be awarded, also in part or all, at the time of contract award or later upon issuance of modification, or they may not be awarded at all. The City would like to make one (1) contract award.

Stand-by days are to be charged per occurrence. Therefore an estimate can be provided. Stand-by days include weather, no-fly days beyond control of consultant, or upon mutual consent between the City and the consultant due to unforeseen circumstances.

Option for additional line km and/or areas can be executed upon amendment to survey contract subject to negotiation.

The City may require the delivery of the numbered line item identified in the schedule as optional "add-on" line km and/or areas at the price stated in the schedule. The contracting officer may exercise the option once or multiple times by written notice to the consultant. These written notices may be issued at any time from date of award through consultant demobilization. The contracting officer may order all or any portion of the option's estimated quantity through the issuance of one or more written notifications up to the estimated quantity stated in the schedule.

QUESTIONS ON THE PROPOSAL

Questions about the proposal shall be addressed in writing by email on or before 2:00 Central Time, July 31, 2015. Questions should be submitted to: Ms. Shannon Ausen, Office of Public Works-Engineering, 224 West Ninth Street, Sioux Falls, SD 57104-6407 (605) 367-8601. Email address is sausen@siouxfalls.org.

All questions will be posted daily on the City's website under on the Request for Proposals home page.

EVALUATION OF PROPOSAL SCHEDULE

A consultant selection team comprised of Sioux Falls Public Works Engineering and Water Divisions and USGS members shall review and select the firm they feel will supply the best and most complete effort. The selection of a qualified firm will be made no later than September 4, 2015.

The evaluation of proposal shall proceed on the following schedule:

July 17, 2015	Request for Proposal posted on website
July 31, 2015	Deadline for Questions
August 7, 2015	Proposals received at City Hall
September 4, 2015	Select consultant and prepare agreement

Please furnish **one paper copy and one PDF copy on a DVD** of the proposal to Ms. Shannon Ausen, PE, Office of Public Works-Engineering, 224 West Ninth Street, Sioux Falls, SD 57104-6407 by 2:00 p.m. Central Time, August 7, 2015. Submittals received after the stated time will be returned unopened and will not be considered.

All proposals received by the City will be confidential.