



Note: At 8:00 a.m., the Board of Aldermen will hold an executive session regarding personnel pursuant to RSMo 610.021(3).

Finance Committee Agenda

October 10, 2016

Immediately following the Executive Session
Board Conference Room, 1st Floor, City Hall

- 1. Call to Order**
- 2. Financial Updates**
- 3. Consent Items**
 - A. Approve the minutes from the September 12, 2016, meeting
 - B. Approve a purchase order with Dale Brothers, Inc. for salt and sand materials for the 2016/2017 winter season (Public Works)
 - C. Approve the purchase of hydrogen sulfide odor control chemicals from Brenntag for the sanitary sewer lines in the Riss Lake subdivision (Public Works)
- 4. Action Items**
 - A. Approve the reinvestment of funds from two matured CDs in the Debt Service Reserve Funds of the Brush Creek Drainage Area Neighborhood Improvement District (Fund No. 23) and the Brink Meyer Road Neighborhood Improvement District (Fund No. 24) (Administration)
 - B. Approve the purchase of a new RD8100 PDLG Locator Kit from Subsurface Solutions for Missouri One-Call requests for utility line locating sewer infrastructure (Community Development)
 - C. Approve Work Authorization No. 68 with North Hills Engineering for the design of the Wastewater Treatment Facility Headworks Screen Reconstruction (Public Works)
 - D. Approve Work Authorization No. 67 with North Hills Engineering for design of the Riverchase sewer repair (Public Works)
- 5. Non-Action Items**
 - A. Health Insurance Renewal Update (Administration)
 - B. Downtown Entryway Markers Update (Administration)
- 6. Unfinished Business (postponed from prior meetings)**
- 7. Other Business**
- 8. Adjourn**



Finance Committee Meeting
September 12, 2016 – 8:00 a.m.
Executive Chambers – Board Room

Minutes

1. CALL TO ORDER

Chair Sportsman called the meeting to order at 8:06 a.m. A quorum was present.

- **Members Present:** Chair Marc Sportsman, Vice Chair Dave Rittman, Nan Johnston, Diane Driver and Robert Lock
- **City Staff Present:** City Administrator Lauren Palmer, Community Development Director Stephen Lachky, Finance/Human Resources Director Matthew Chapman, Police Chief Kevin L. Chrisman, Assistant to the City Administrator Tim Blakeslee and Community Development Department Assistant Shakedra Knight

2. FINANCIAL UPDATES

3. ACTION ITEMS

A. Approve the minutes from the August 29, 2016, meeting

Driver moved to approve the August 29, 2016, minutes. Rittman seconded; motion passed 5-0.

B. Authorize the city attorney to file an intervention on behalf of Platte County customers in the Office of the Public Counsel appeal of the Missouri Public Service Commission rate determination for Missouri American Water Company

City Administrator Lauren Palmer detailed the rate case intervention with the Public Service Commission on behalf of the Platte County water district. Missouri American Water Company planned to construct a new water treatment plant in 2017. If the consolidated rates were not approved, water rates in Platte County were estimated to jump as much as 50 percent to support costs associated with the new plant. The City of Riverside requested that Parkville handle the motion to intervene on behalf of Platte County customers in the appeal. The City could continue to engage Joe Bednar as special counsel at an hourly rate of \$300.

Driver moved to recommend that the Board of Aldermen authorize the city attorney to file an intervention on behalf of Platte County customers in the Office of the Public Counsel appeal of the Missouri Public Service Commission rate determination for Missouri American Water Company, subject to the following conditions: costs of the engagement are capped at \$40,000 without prior written authorization from the City of Parkville in accordance with the Purchasing Policy; and the City of Riverside commits to pay Parkville \$10,000 to offset the legal costs. Rittman seconded; motion passed 5-0.

C. Approve an employee recognition gift in accordance with the Miscellaneous Expense Authorization and Reimbursement Policy

City Administrator Lauren Palmer stated that City Treasurer Steve Berg was retiring at the end of September and the policy stated that gifts over \$100 required approval by the Committee. Palmer requested approval for the purchase of a painting for Mr. Berg for his retirement.

Driver moved to approve the employee recognition gift in the amount of \$350, as recommended by staff. Rittman seconded; motion passed 5-0.

D. Approve a purchase order for the rental of waste collection containers from Metro Rolloff Container Services for the 2016 Fall Cleanup event

Public Works Director Alysén Abel stated that in fall of 2015 Metro Rolloff Container Services quoted total fees of \$3,400 for services for 2016 Fall Cleanup. Abel stated that the Streets budget included \$13,500 for City cleanup events and the estimated cost of \$2,500 for the 2016 fall cleanup could fluctuate depending on the tonnage received. Abel anticipated that the event would need ten containers at \$300 per unit and she added that Metro Rolloff did not have a business license and that approval would be contingent upon approval of the license.

Driver moved to approve the rental of waste collection containers from Metro Rolloff Container Services, LLC for the 2016 Fall Cleanup Event in an estimated amount of \$3,400, contingent upon the company obtaining a valid Parkville business license. Rittman seconded; motion passed 5-0.

E. Approve Work Authorization No. 2 with Arbor Masters for removal of hazardous trees at 13th and Main streets and approve a tree removal agreement with the homeowners at 1206 Main Street

Public Works Director Alysén Abel stated that a work authorization with Arbor Masters needed approval for hazardous tree removals at 13th and Main streets and at 1206 Main Street. Abel stated that the residents agreed to pay 50 percent of the costs and legal staff drafted an agreement. The impact to the budget was \$1,400, which was the remaining half after payment was received by the residents.

Driver moved to approve Work Authorization No. 2 with Arbor Masters for the removal of two hazardous trees adjacent to 1206 Main Street in the amount of \$2,800, and to approve a tree removal agreement with the homeowners of 1206 Main Street that outlines the obligations regarding the removal of the two hazardous trees. Rittman seconded; motion passed 5-0.

F. Approve Work Authorization No. 64 with North Hills Engineering for design and project management of the 45 Highway pump station reconstruction project

Public Works Director Alysén Abel stated that a work authorization for 45 Highway pump station reconstruction with North Hills Engineering was needed because the station had a malfunction that caused sewage overflows and needed new mechanical and electrical upgrades. The reconstruction included pumps, base elbows, discharge piping and motor controls replacement.

Driver moved to approve Work Authorization No. 64 with North Hills Engineering for the design and project management of the 45 Hwy pump station reconstruction in the amount of \$6,150. Rittman seconded; motion passed 5-0.

G. Approve two change orders with Full Nelson Plumbing for plumbing work for the English Landing restroom rehabilitation

Public Works Director Alysén Abel stated that approval of a change order was needed for the English Landing Park Restroom rehabilitation project. She noted that Tier 1 of the project included basic restroom maintenance and sidewalk improvements. The contractor, Full Nelson Plumbing, split up the labor and materials costs for the fountain installation on the bid that totaled \$15,840 for both items. Staff believed that the cost was excessive and the element was not critical and could wait until after the November 1 deadline to be completed. Abel noted that a possible donation and other alternatives were being explored in regards to the water fountain installation. She stated that during the initial review regarding the pipe replacement, staff discovered that Wirsbo (PEX) piping was less expensive than PVC and would require less maintenance. The decrease in cost for the change in piping reduced the total bid to \$12,139.

Driver moved to approve Change Order No. 1 and 2 with Full Nelson Plumbing for the plumbing work associated with the English Landing Park Restroom rehabilitation, with a revised contract amount of \$12,139.25. Rittman seconded; motion passed 5-0.

4. NON-ACTION ITEMS

5. OTHER BUSINESS

A. September 26th meeting cancelled

City Administrator Lauren Palmer reminded the Committee that the September 26, 2016, meeting was cancelled.

6. ADJOURNMENT

Driver moved to adjourn the meeting at 8:53 a.m. Rittman seconded; motion passed 5-0.

Chair Sportsman declared the meeting adjourned at 8:53 a.m.

Submitted by:

Shakedra Knight
Community Development
Department Assistant

Approval Date

CITY OF PARKVILLE Policy Report

Date: October 3, 2016

Prepared By:
Alysen Abel
Public Works Director

Reviewed By:
Tim Blakeslee
Assistant to the City Administrator

ISSUE:

Approve a purchase order with Dale Brothers, Inc. for the salt and sand materials for the 2016/2017 winter season.

BACKGROUND:

City crews use salt and sand during winter snow and ice clearing operations each year. The salt storage building holds approximately 550 tons of material and is usually full at the beginning of the winter season. Staff uses approximately 100 tons of material per major storm event.

In August 2016, staff accepted the following quotes:

Company	50/50 Salt/Sand per Ton	100% Salt per Ton
Holliday Sand & Gravel Company (Riverside, MO)	\$68.95	\$93.95
Dale Brothers, Inc. (Kansas City, KS)	\$51.75	\$68.00
Kaw Valley Companies, Inc. (Kansas City, KS)	\$65.00	\$100.00

Dale Brothers provided the lowest quote for the both types of winter mixes that staff normally uses: (1) salt and sand mix and (2) straight salt. The unit prices are good for the entire 2016/2017 snow season, until April 1, 2017.

The City has used Dale Brothers in the past for the winter mixes and has been satisfied with the product. They have historically been the low bidder with respect to the salt/sand mixes. Last year, the price was \$50.75 per ton for salt/sand mix and \$68.00. There was a \$1.00 per ton increase from last year's quote.

BUDGET IMPACT:

The 2016 budget was approved with \$40,000 for Emergency Snow Removal (line item 40-520-07-20-00). The current balance for this line item is \$25,517.77. Staff intends to recommend funding in the 2017 budget to cover the cost of the snow material for the second half of the 2016/2017 snow season. Staff will continue to purchase material as needed within the prescribed budgets.

ALTERNATIVES:

1. Approve a purchase order with Dale Brothers, Inc. for salt and sand materials.
2. Do not authorize the purchase order with Dale Brothers, Inc.
3. Postpone the item.

STAFF RECOMMENDATION:

Staff recommends approval of a purchase order with Dale Brothers, Inc. for salt and sand materials. The purchase order will guarantee the unit prices until April 1, 2017.

ITEM 3B

For 10-10-16

Board of Aldermen - Finance Committee Meeting

POLICY:

The Purchasing Policy, Resolution No. 10-02-14, requires the Board of Aldermen to approve all purchases above \$10,000 upon recommendation of the Finance Committee.

SUGGESTED MOTION:

I move to recommend that the Board of Aldermen approve a purchase order with Dale Brothers, Inc. for salt and sand materials through April 1, 2017, subject to annual appropriations.

ATTACHMENTS:

1. Quote – Dale Brothers
2. Purchase Order

Doubled D, Inc.
dba Dale Brothers
PO Box 12541
Kansas City, KS 66112

DALE
BROTHERS

Phone: 913.334.1075
Fax: 913.334.0090
Online: dalekc.com

Environmentally responsible products and services

September 21, 2016

City of Parkville
8880 Clark Ave.
Parkville, MO 64152

RE: ICE CONTROL PRICES 2016/2017

2016-4/1/2017

Salt Rate: \$68.00 per Ton Delivered

1x1 Mix Rate: \$51.75 per Ton Delivered

Harold Dunn
Dale Brothers

Date

Print Name: _____

Title: _____

City of Parkville

Date

DALE
BROTHERS

- **Demolition**
- **Recycling**

- **Excavating**
- **Trucking**

- **Aggregate**
- **Site Clean-up**

PURCHASE ORDER
(non-construction)

CITY OF PARKVILLE (PURCHASER)
8880 Clark Avenue
Parkville, MO 64152

Date: October 18, 2016

Upon proper acceptance, we agree to purchase from you upon terms and conditions set forth below and on the attached pages hereto.

VENDOR: Dale Brothers, Inc.
P. O. Box 12541
Kansas City, KS 66112-0542
913-334-1075

SHIP TO: Streets Maintenance Building, 9300 Graden Road, Parkville, MO 64152

INVOICE TO: Parkville City Hall, 8880 Clark Ave., Attn: Alan Schank, Parkville, MO 64152

ALL MATERIAL SHALL BE DELIVERED TO PURCHASER FREIGHT PREPAID, UNLESS OTHERWISE SPECIFIED BELOW.

Vendor agrees to furnish following goods in accordance with the terms and provisions of this Purchase Order Agreement consisting of 5 pages including attachments. Purchaser agrees to pay a **UNIT PRICE** of **\$68.00 per ton for Straight Salt Delivered and \$51.75 per ton Delivered for 1 & 1 Salt and Sand Mix** for such materials, subject to any additions or deductions agreed upon in writing. **Freight charges are included in purchase price and sales taxes will not be charged to the Purchaser as a tax exempt entity. Purchaser will provide Vendor with a Tax Exemption Certificate upon request.** Payment is to be made within thirty (30) days after delivery of goods and receipt of invoice. This purchase order is only valid through April 1, 2017.

ITEMS:

Straight Salt

Price: Sixty-Eight Dollars (\$68.00) per ton
Delivered

1 & 1 Salt and Sand Mix

Price: Fifty Dollars & 75 cents (\$51.75) per
Ton Delivered

See Attachment "A" – Terms and Conditions
See Attachment "B" – Insurance Requirements

SCHEDULE OF DELIVERY:

Materials shall be delivered on request within 72 hours of placing order.

NOTE: All Terms and Conditions for Purchase Order attached hereto are incorporated herein by reference and made a part of this Purchase Order. Vendor's signature and return of this document as presented, or its delivery of any of the items covered by this Purchase Order, shall constitute acceptance of all of its terms and conditions. If this Purchase Order is not signed and returned to Purchaser within ten (10) days of the date stated on page 1 above, however, it may be deemed voidable at the option of Purchaser. Payment shall not be due until Vendor has furnished Purchaser, with the required Certificates of Insurance and any other documents required by Purchaser.

All terms in any offer, bid, order acknowledgement or other document that are inconsistent with the terms stated herein are explicitly rejected and not a part of this Purchase Order.

CITY OF PARKVILLE, MISSOURI. ("Purchaser")

DALE BROTHERS, INC.
Vendor

By: _____
Nanette K. Johnston

By: _____

Title: **Mayor** _____

Title: _____

Date: _____

Date: _____

CITY OF PARKVILLE Policy Report

Date: October 4, 2016

Prepared By:
Alysen Abel
Public Works Director

Reviewed By:
Tim Blakeslee
Assistant to the City Administrator

ISSUE:

Approve the purchase of hydrogen sulfide odor control chemicals from Brenntag for the sanitary sewer lines in the Riss Lake subdivision.

BACKGROUND:

The Riss Lake subdivision is primarily served by force main sewers. The City pumps a chemical solution into these sewers to react to the sewage to reduce the amount of hydrogen sulfide in the wastewater. This reduces the potential for odor, corrosion caused by hydrogen sulfide gas, and dangerous gas buildup.

The storage tank at Riss Lake holds up to 4,000 gallons of liquid chemical. Staff typically receives the chemical in two deliveries throughout the year to meet the system demand of approximately 20-25 gallons per day. In the past, the City has also used Bioxide. In 2014, the City used Robin 4000, which has the same chemical properties as Bioxide, but at a lower unit price. Due to the specific chemical properties of the odor control tank and forcemain, additional chemical testing would be necessary to consider other types of odor control chemicals outside of Bioxide and Robin 4000. The Public Works staff does not have the resources available to provide this specialized testing.

In May 2015, City staff solicited quotes from Brenntag (for the Robin 4000 product) and Evoqua (for the Bioxide product). Evoqua declined the City's request for a quote in 2015. Staff contacted Evoqua again in 2016, but was not able to obtain a quote. For reference, the 2014 quote from Evoqua was \$2.415 per gallon.

On June 2, 2015, the Board of Aldermen approved a purchase order with Brenntag for the Robin 4000 chemical solution at a unit price of \$2.48 per gallon. Brenntag has extended the timeframe associated with its unit price to December 31, 2016. Staff plans to purchase 3,900 gallons of the liquid chemical, which will be \$9,672.

Staff has performed research and has not been able to find another vendor in the regional area that provides Robin 4000 odor control product. Based on conversations with Brenntag, they are the sole source provider of this product for the region.

BUDGET IMPACT:

The Sewer Fund includes \$22,000 for the purchase of odor control chemicals. There is approximately \$11,000 remaining in the Odor Control line item of the Sewer Fund, which will cover this expense.

ALTERNATIVES:

1. Approve the purchase of Robin 4000 from Brenntag at a rate of \$2.48 per gallon, in the amount of \$9,672.
2. Do not authorize the purchase.
3. Postpone the item.

ITEM 3C

For 10-10-16

Board of Aldermen - Finance Committee Meeting

STAFF RECOMMENDATION:

Staff recommends approval of the purchase order for Robin 4000 odor control product from Brenntag at a rate of \$2.48 per gallon, in the amount of \$9,672.

POLICY:

Per the Purchasing Policy, Resolution No. 10-02-14, the Finance Committee may authorize purchases up to \$10,000.

SUGGESTED MOTION:

I move to approve the purchase order for Robin 4000 from Brenntag at a rate of \$2.48 per gallon, in the amount of \$9,672.

ATTACHMENTS:

1. Letter of Intent from Brenntag
2. Purchase Order

ConnectingChemistry

June 29, 2016

Mr. Richard Wilson
City of Parkville
Procurement Services Division
8800 Clark Ave
Kansas City, MO 64152

Subject: Extension of pricing for Robin 4000

Dear Mr. Wilson,

This is to advise the City of Parkville Missouri that Brenntag Mid South wishes to extend the current pricing of \$2.48/gal. for the product Robin 4000 (920791) to be valid until 12-31-2016.

Please feel free to contact me with any other further information needed.

We look forward to our continued partnership.

Sincerely,

Marc Peterson
Sales Representative
Brenntag Mid South

MP/kmh

PURCHASE ORDER
(non-construction)

CITY OF PARKVILLE (PURCHASER)
8880 Clark Avenue

Parkville, MO 64152

Phone: 816-741-7676 Fax: 816-741-0013

Date: October 10, 2016

Upon proper acceptance, we agree to purchase from you upon terms and conditions set forth below and on the attached pages hereto.

VENDOR

Brenntag Mid-South, Inc.

5200 Stillwell Avenue

Kansas City, MO 64120

Phone: 816-483-9996 Cell: 816-585-2241 Fax: 816-245-4685

SHIP TO:

City of Parkville
8000 Agron, Riss Lake Subdivision
Parkville, Missouri 64152 (Nearest address for GPS)

INVOICE TO:

Parkville City Hall, 8880 Clark Ave., Attn: Richard Wilson, Parkville, MO 64152

ALL MATERIAL SHALL BE DELIVERED TO PURCHASER FREIGHT PREPAID, UNLESS OTHERWISE SPECIFIED BELOW.

Vendor agrees to furnish the following goods in accordance with the terms and provisions of this Purchase Order Agreement consisting of 6 pages including attachments. Purchaser agrees to pay a **UNIT PRICE of Two and 48/100---- Dollars (\$ 2.48) per gallon** for such materials, subject to any additions or deductions agreed upon in writing. **Freight charges are included in purchase price and sales taxes will not be charged to the Purchaser as a tax exempt entity. Purchaser will provide Vendor with a Tax Exemption Certificate upon request.** Payment is to be made within **thirty (30 days)** after delivery of goods and receipt of invoice. This purchase order is only valid through December 31, 2016.

ITEMS:

Robin 4000 chemical odor control for Riss Lake Subdivision. Chemical to be ordered on an as-needed basis.

See Attachment "A" – Terms and Conditions
See Attachment "B" – Insurance Requirements
See Attachment "C" – Brenntag quote dated 5/7/15

SCHEDULE OF DELIVERY:

F.O.B. 8000 Agron, Riss Lake Subdivision, Parkville, MO 64152

Please contact Richard Wilson at 816-215-3690 at least 24 hours in advance to schedule delivery.

NOTE: All Terms and Conditions for Purchase Order attached hereto are incorporated herein by reference and made a part of this Purchase Order. Vendor's signature and return of this document as presented, or its delivery of any of the items covered by this Purchase Order, shall constitute acceptance of all of its terms and conditions. If this Purchase Order is not signed and returned to Purchaser within ten (10) days of the date stated on page 1 above, however, it may be deemed voidable at the option of Purchaser. Payment shall not be due until Vendor has furnished Purchaser, with the required Certificates of Insurance and any other documents required by Purchaser.

All terms in any offer, bid, order acknowledgement or other document that are inconsistent with the terms stated herein are explicitly rejected and not a part of this Purchase Order.

CITY OF PARKVILLE, MISSOURI. ("Purchaser")

BRENNTAG MID-SOUTH, INC. ("Vendor")

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

**CITY OF PARKVILLE
Policy Report**

Date: Monday, October 3, 2016

Prepared By:
Steve Berg
Treasurer

Reviewed By:
Matthew Chapman
Finance/HR Director

ISSUE:

Approve the reinvestment of funds from two matured CDs in the Debt Service Reserve Funds of the Brush Creek Drainage Area NID (Fund #23) and the Brink Meyer Road NID (Fund #24).

BACKGROUND:

The Debt Service Reserve Funds (DSRFs) are two reserve funds that are held by BOK Financial as the banking agent for the 2014 NID bonds for the Brush Creek and Brink Meyer projects. Each of these issues includes a reserve fund which will be used to fund part of the final payment in 2034, with the Brush Creek DSRF equaling \$398,225, and the Brink Meyer DSRF equaling 290,287.50. Interest earned on these accounts is applied to the respective funds each year to reduce the interest payments which the City pays on the bond payments. While the funds are held by BOK Financial, the City is allowed some control over how the funds are invested. The City has options of using CDs at the bank or investing the funds in brokered CDs, which typically offer substantially better interest rates than those offered by BOK Financial or other local banks. Two CDs have matured, with amounts of \$130,000 (Brush Creek), and \$95,000 (Brink Meyer). The bank currently offers the following yields for various terms. Note that funds are federally insured up to the \$250,000 at each bank where funds are held.

<u>Term in months</u>	<u>12</u>	<u>18</u>	<u>24</u>	<u>36</u>	<u>48</u>	<u>60</u>
BOK Financial	0.40%	0.40%	0.60%	0.70%	0.90%	1.00%
BankLiberty (for comparison)	0.20%	0.30%	0.40%	0.50%	0.55%	0.60%

In addition to the above, BOK Financial offers the option of investing the funds in brokered CDs, putting the funds in higher yielding CDs offered by non-local banks. These CDs are still fully insured up to \$250,000 at each institution offering the CDs, and offer yields well above those listed above. Current yield ranges are as follows:

- 1 year = 0.75 to 0.80%
- 2 year = 1.10 to 1.15%
- 3 year = 1.20 to 1.30%
- 4 year = 1.25 to 1.35%
- 5 year = 1.40 to 1.55%

Prior to maturity, these funds were held in 2-year brokered CDs with an interest rate of 0.65%. At the initial set up of the DSRF funds two years ago, the two-year term was selected in accordance with the strategy of laddering the investments in each fund, with similar amounts in brokered CDs set to mature in 2017 and 2018. BOK Financial does not charge an additional fee for handling brokered CD purchases.

BUDGET IMPACT:

Because the amount of the interest earned on the Debt Service Reserve in each fund is used to reduce the City's annual interest payments on the NID bonds, the more interest that can be earned on the DSRFs, the less the City has to contribute each year to the bond interest

ITEM 4A

For 10-10-16

Board of Aldermen - Finance Committee Meeting

payments from other sources. If the CDs are reinvested as proposed at the best available brokered CD rates, the City's annual interest earnings, and savings, will increase by about \$845 for the Brush Creek NID, and \$617 for the Brink Meyer NID, using a 3-year term.

ALTERNATIVES:

1. Recommend that the Board of Aldermen approve the reinvestment of funds from these two brokered CDs for a 3-year term for each CD.
2. Direct staff to choose a different strategy, using either the CDs or brokered CDs offered by BOK Financial, and/or different terms for the length of the CDs.
3. Postpone the item.

STAFF RECOMMENDATION:

Staff recommends that the Finance Committee recommend that the Board of Aldermen approve the reinvestment of funds from these two brokered CDs for a 3-year term for each CD. This provides the highest income currently available for intermediate term CDs, at rates significantly above the rates that were paid on the CDs that matured. The 3-year term is also consistent with the City strategy of laddering the investments within these debt service funds so that approximately one-third of each fund matures each year. This strategy balances the greater interest available from intermediate term CDs with the ability to take advantage of higher rates that are likely to become available at some future time.

POLICY:

The policy issue is to determine the most advantageous strategy for investing the funds in the Brush Creek NID and Brink Meyer NID Debt Service Reserve Funds. The potential for receiving higher interest yield at some future time in a very uncertain interest rate environment must be balanced with the advantages of locking in the best currently available rate.

SUGGESTED MOTION:

I move to recommend the Board of Aldermen grant the Finance/Human Resources Director authority to reinvest \$130,000 of the Debt Service Reserve Fund for the Brush Creek Drainage Area NID and \$95,000 of the Debt Service Reserve Fund for the Brink Meyer Road NID into brokered CDs having a 3-year term.

CITY OF PARKVILLE Policy Report

Date: Thursday, October 5, 2016

Prepared By:
Stephen Lachky
Community Development Director

Reviewed By:
Tim Blakeslee
Assistant to the City Administrator

ISSUE:

Request to approve the purchase of a new RD8100 PDLG Locator Kit from Subsurface Solutions for City staff to respond to Missouri One-Call requests for utility line locating sewer infrastructure.

BACKGROUND:

The Community Development Department is currently responsible for responding to Missouri One-Call requests, specifically for utility line locating the city's sewer infrastructure. Currently, City staff use a 15-year-old basic magnetic locator which has limited applications, is suited specifically for shallow locates, and does not meet state requirements for being able to detect tracer wires on underground lines. As a result, staff budgeted \$5,000 in the 2016 Capital Improvement Program (CIP) to purchase a new line locator kit. This includes the locator itself, as well as a sub-meter handheld GPS unit.

Staff first researched equipment from Schonstedt Instrument Company since the current MAC-51Px pipe and cable locator is from that manufacturer. The company's recommended locator kit for sewer pipe locates is the **Xtpc+ multiple frequency locator**. This model starts at \$3,100 and comes with a 3-year warranty (See Attachment 1 for specifications). While the transmitter displaces signal strength and depth readouts, it doesn't include GPS or have the capability to log points remotely for ArcGIS purposes. The previous Community Development Director estimated the additional sub-meter handheld GPS unit to cost between \$2,300-\$2,700.

Staff also researched equipment from Radiodetection since every local utility provider in the field (e.g., KCP&L, Missouri Gas Energy) uses this brand of equipment. On June 22, Community Development Department and Alliance Water Resources staff met with a representative from Subsurface Solutions, the exclusive provider, to test two Radiodetection locator kits in the field:

- **RD7100 locator kit** – basic locator for underground cable and pipes. This model does not include a GPS unit for data logging, starts at \$3,600, and includes a 3-year warranty after registration (See Attachment 2 for specifications).
- **RD8100 locator kit** – more advanced locator with on-board GPS and data logging. User can tag waypoints and current location, saving this information which is then uploaded via Bluetooth or USB to a computer. The locator can store up to 1,000 survey points within the locator. This model also includes a Bluetooth link of up to 1,400 ft. to the transmitter; the user can adjust power levels and frequencies on the locate receiver rather than walking back over to the transmitter and adjusting. This model starts at \$4,800 and includes a 3-year warranty after registration (See Attachment 3 for specifications).

Both kits will identify underground cables and pipes and contain a reader display screen on the receiver displaying signal strength, frequency and depth; however the RD8100 locator kit contains a stronger antenna (up to 50 ft. deep) and provides better accuracy for locates. Additionally the RD8100 locator kit allows staff to tag GPS points, which can be saved and transferred over into Google Earth or ArcGIS. Alliance Water Resources said it would be a beneficial feature for staff to map existing sewer lines while conducting locates and/or map new sewer lines as they're installed.

ITEM 4B

For 10-10-16

Board of Aldermen – Finance Committee Meeting

Staff also researched other sewer and underground pipe utility line locator equipment from vendors including Pipehorn Locating Technology, Amprobe, and CST/berger. However, equipment from these vendors is primarily for shallow locates (less than 10 ft. depth), there are fewer frequencies available, and the transmitter/receiver antennas don't have as strong of signals.

Staff recommends purchasing the **RD8100 locator kit** since it contains a stronger antenna for better accuracy, has GPS capability already built into the model alleviating the need to purchase an additional GPS unit (as well as the need to carry the handheld GPS unit with the other equipment), and has the function to tag GPS points to be transferred over into Google Earth or ArcGIS, helping staff map the City's underground sewer infrastructure lines as new lines are installed. Costs for the RD8100 PDLG locator kit are listed in Attachment 4.

BUDGET IMPACT:

The 2016 CIP includes \$5,000 from the General Fund for the replacement of our line locator kit. Subsurface Solutions estimates the RD8100 PDLG device with transmitter and locator bag to cost \$6,396. Although this is slightly more than the amount budgeted in the CIP, the original CIP request desired a GPS unit to be included with the locator, and the RD8100 PDLG model contains a built-in device and logging capability to be imported into Google Earth or ArcGIS for mapping purposes. Additionally, both staff and Alliance Water Resources feel this logging capability would be beneficial to map sewer lines while conducting locates, or as new lines are installed. Lastly, the Community Development Department has been significantly under budget on other CIP projects this year. The demolition of the house at 6201 Hwy 9 earlier this year was \$5,200 under budget, and the replacement of the Community Development Department's 2004 Ford Taurus is currently \$5,141 under budget.

If needed, staff can reduce equipment costs by \$877 if needed by substituting the RD8100's standard rechargeable lithium-ion battery with a D-cell battery unit. There would be no changes to the model specifications other than the battery life being 12-15 hours on D-cell batteries instead of 45 hours on a lithium-ion battery. The standard lithium-ion battery is rechargeable up to 700 times, and staff typically spends 5-6 hours a week responding to One-Call requests; meaning each charge can last staff 7-9 weeks.

	Xtpc+ multiple frequency locator	Radiodetection RD7100	Radiodetection RD8100
Locator Costs	\$3,100	\$2,293	\$3,806
Transmitter and Battery Costs	Included w/ locator costs	\$2,433	\$2,433
Accessories Costs	\$525	\$157	\$157
Total Costs	\$3,625	\$4,883	\$6,396
Operating Frequency	512 Hz 33 kHz 82 kHz	512 Hz 640 Hz 8 kHz 33 kHz	512 Hz 640 Hz 8 kHz 33 kHz 65kHz
Max. Depth Capability	19' (5.8 m)	98' (30 m)	98' (30 m)
On-board GPS	No	No	Yes
GPS point logging	No	No	Yes
Warranty	3-year	3-year (after registration)	3-year (after registration)

ITEM 4B

For 10-10-16

Board of Aldermen – Finance Committee Meeting

ALTERNATIVES:

1. Approve the purchase of a RD8100 PDLG Locator Kit from Subsurface Solutions totaling \$6,396.
2. Approve the purchase of a RD8100 PDLG Locator Kit from Subsurface Solutions but substitute the lithium-ion battery with a D-cell battery for a price of \$5,519.
3. Do not approve the purchase and provide alternative direction to staff.
4. Postpone the purchase.

STAFF RECOMMENDATION:

Staff recommends that the Finance Committee recommend that the Board of Aldermen purchase new RD8100 PDLG line locator kit equipment from Subsurface Solutions.

POLICY:

Per the Purchasing Policy, Resolution No. 10-02-14, the Finance Committee may approve purchases up to and including \$10,000.00. A minimum of three quotes are required, whenever this is possible, for new vehicles and equipment costing more than \$250 and less than \$10,000.

SUGGESTED MOTION:

I move to approve the purchase of RD8100 PDLG Locator Kit equipment from Subsurface Solutions in the amount of \$6,396.

ATTACHMENTS:

1. Schonstedt Xtpc+ specifications
2. Radiodetection RD7100 specifications
3. Radiodetection RD8100 specifications
4. Schonstedt Xtpc+ quote
5. Radiodetection RD7100 quote
6. Radiodetection RD8100 quote

NEW



PIPE & CABLE LOCATOR

The Multi-Frequency Pipe & Cable Locator



THE LOCATOR OF CHOICE FOR ALL UTILITIES

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- ✓ Water and Sewer
- ✓ Gas
- ✓ Underground Construction



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SPECIFICATIONS



Extends for greater sensitivity

Retracts for easier carrying



PIPE & CABLE LOCATOR



Inductive Signal Clamp shown is optional

Receiver

Operating Frequency:	512 Hz, 33 kHz and 82 kHz
Passive Detection:	50/60 Hz
Sonde Detection:	512 Hz
Battery:	9 V Alkaline single battery
Battery Life:	12 hrs. intermittent use
Audio Output:	10 – 1500 Hz determined by signal strength
Max. Depth Capability:	Approximately 19' (5.8 m) Sonde mode approximately 5' – 8' (1.5 – 2.5 m)
Dimensions:	Closed: 17.5" L x 3" D x 8.5" W (44 cm x 7.6 cm x 21.5 cm) Extended: 27.7" L x 3" D x 8.5" W (70 cm x 7.6 cm x 21.5 cm)
Weight (incl. battery):	2.8 lb (1.25 kg)
Operating Temp:	-4°F to 140°F (-20°C to 70°C)



Included: XTpc+ receiver, transmitter and accessories. Inductive Signal Clamp shown is optional

Transmitter

Operating Frequency:	512 Hz, 33 kHz and 82 kHz
Operating Modes:	Conductive, all frequencies Inductive, 82 kHz only Inductive Clamp (optional), 33 and 82 kHz only
Output Power:	512 Hz – ½, 1, 2 or 5 W 33 kHz – ½, 1, 2 or 5 W 82 kHz – ½ or 1 W (FCC limited)
Max. Output Voltage:	100 V RMS
Resistance Meas. Range:	500 Ω to 5 MΩ
Voltage Meas. Range:	0-260 VAC and 0-60 VDC
Battery:	Rechargeable NiMH pack (12 V)
Battery Life:	8 hours (intermittent usage @ 70°F)
Charging:	Internal smart charger powered by AC/DC power adapter (100-240 V – 0.8 A), or by 22-30 VDC, 1.5 A supply
Outputs/Inputs:	a) Phone plug output connector to: <ul style="list-style-type: none">• Inductive clamp• Conductive clips b) 5.5 mm x 2.1 mm DC jack input connector, center positive, from: <ul style="list-style-type: none">• AC/DC power adapter (100-240 V – 0.8 A)• 22-30 VDC, 1.5 A supply
Dimensions:	14" W x 10.5" D x 6" H (35.5 cm x 27 cm x 15 cm)
Weight:	9.1 lb (4.1 kg)
Operating Temp:	-4°F to 140°F (-20°C to 70°C)
Backlighting:	White LED array, ambient light sensing
Environmental:	IP56 per ANSI/IEC 60529-2004 MIL-STD-810 F

Order/Info Hotline:
800-999-8280

Order/Info Online:
www.schonstedt.com



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INSTRUMENT COMPANY

Making Locating Easier Since 1953
an employee-owned company

RD7100™ Locator Specification



RD7100 Locator Specification

1. Product Summary

1.1 Product Descriptions:	Precision Buried Utility Locator Precision Cable and Pipe Locator Locate System Receiver Utility Specific Precision Locator
1.2 Intended Use:	Locating the position / path of buried pipes and cables Detecting and pinpointing insulation faults on buried pipes and cables
1.3 Standard Equipment:	Locator Quickstart guide Mini USB 2.0 compliant data cable

2. Performance

2.1 Sensitivity:	6E-15 Tesla 5µA at 1 meter (33kHz)
2.2 Dynamic range:	140dB rms/√Hz
2.3 Selectivity:	120dB/Hz
2.4 Depth measurement precision ¹ :	± 3%
2.5 Locate accuracy:	± 5% of depth
2.6 Active Locate filter bandwidth:	± 3Hz, 0 < 1kHz ± 10Hz, ≥ 1kHz
2.7 Start-up time:	Less than 1 second
2.8 Maximum depth readout ² :	Metric: Cable / Pipe: 30m Sonde: 19.5m Imperial: Cable / Pipe: 98' Sonde: 64'

3. Locate Functions

3.1 Active Locate Modes:	Up to four, model dependent: <ul style="list-style-type: none"> ▪ Peak ▪ Peak+™ (choice of combined Peak & Guidance or Peak & Null) ▪ Guidance ▪ Null 							
3.2 Gain control	Guidance Mode: Automatic Other modes: Manual gain using "+" or "-" with one touch to return to center (50% of Full Scale)							
3.3 Active locate frequencies:	Up to seven:							
	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG
Active frequencies	4	5	5	5	5	5	7	7
512Hz		●	●				●	●
640Hz			●	●			●	●
8kHz (8192Hz)	●	●	●	●	●	●	●	●
33kHz (32768Hz)	●	●	●	●	●	●	●	●
65kHz (65536Hz)	●	●	●	●	●	●	●	●
83kHz (83077Hz)	●							
131kHz (131072Hz)							●	●
200kHz (200000Hz)							●	●

● Available feature

3.4 Sonde Frequencies:	<p>Up to four:</p> <table border="1"> <thead> <tr> <th>RD7100 MODEL</th> <th>SL</th> <th>DL</th> <th>DLG</th> <th>PL</th> <th>PLG</th> <th>TL</th> <th>TLG</th> </tr> </thead> <tbody> <tr> <td>512Hz</td> <td></td> <td>●</td> <td>●</td> <td></td> <td></td> <td>●</td> <td>●</td> </tr> <tr> <td>640Hz</td> <td></td> <td>●</td> <td>●</td> <td></td> <td></td> <td>●</td> <td>●</td> </tr> <tr> <td>8kHz (8192Hz)</td> <td></td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>33kHz (32768Hz)</td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </tbody> </table>	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG	512Hz		●	●			●	●	640Hz		●	●			●	●	8kHz (8192Hz)		●	●					33kHz (32768Hz)		●	●	●	●	●	●
RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG																																		
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8kHz (8192Hz)		●	●																																						
33kHz (32768Hz)		●	●	●	●	●	●																																		
3.5 Fault Find:	<p><i>Locate insulation sheath faults on pipes and cables to 10cm / 4" accuracy using the accessory A-Frame and a compatible transmitter</i></p> <table border="1"> <thead> <tr> <th>RD7100 MODEL</th> <th>SL</th> <th>DL</th> <th>DLG</th> <th>PL</th> <th>PLG</th> <th>TL</th> <th>TLG</th> </tr> </thead> <tbody> <tr> <td>8kHz Fault Find</td> <td></td> <td></td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </tbody> </table>	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG	8kHz Fault Find				●	●	●	●																								
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3.6 Passive Locate Modes:	<table border="1"> <thead> <tr> <th>RD7100 MODEL</th> <th>SL</th> <th>DL</th> <th>DLG</th> <th>PL</th> <th>PLG</th> <th>TL</th> <th>TLG</th> </tr> </thead> <tbody> <tr> <td>Power</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Radio</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td></td> <td>●</td> </tr> <tr> <td>CPS (Cathodic Protection System)</td> <td></td> <td>●</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG	Power	●	●	●	●	●	●	●	Radio	●	●	●	●	●		●	CPS (Cathodic Protection System)		●	●												
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Radio	●	●	●	●	●		●																																		
CPS (Cathodic Protection System)		●	●																																						
3.7 Power Filters™ function:	<p>Switch out of Radiodetection's sensitive Power Mode to locate on any of 5 individual mains harmonic frequencies. (RD7100PL and RD7100PLG models only).</p> <table border="1"> <thead> <tr> <th>HARMONIC</th> <th>50 Hz regions</th> <th>60 Hz regions</th> </tr> </thead> <tbody> <tr> <td>Primary</td> <td>50 Hz</td> <td>60 Hz</td> </tr> <tr> <td>3rd</td> <td>150 Hz</td> <td>180 Hz</td> </tr> <tr> <td>5th</td> <td>250 Hz</td> <td>300 Hz</td> </tr> <tr> <td>7th</td> <td>350 Hz</td> <td>420 Hz</td> </tr> <tr> <td>9th</td> <td>450 Hz</td> <td>540 Hz</td> </tr> </tbody> </table>	HARMONIC	50 Hz regions	60 Hz regions	Primary	50 Hz	60 Hz	3rd	150 Hz	180 Hz	5th	250 Hz	300 Hz	7th	350 Hz	420 Hz	9th	450 Hz	540 Hz																						
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3.8 Information displayed:	<ul style="list-style-type: none"> ▪ Signal strength - moving bar graph and numeric value ▪ Mode indication (Peak, Null, Guidance, Peak+ with option of Guidance arrows or Null arrows) ▪ Line or Sonde locate type ▪ Proportional left/right indication ▪ Compass: full 360° line direction indicator ▪ Accessories in use indication ▪ Accessory specific custom screen ▪ Depth and current readout (Line location) ▪ Depth readout (Sonde location) ▪ Gain level (in dB) ▪ Frequency selected ▪ Battery condition ▪ Speaker volume ▪ Operating frequency ▪ GPS satellites in view (where fitted) ▪ GPS status (where fitted) ▪ Configuration menu and submenus ▪ Software version ▪ Last calibration date ▪ Fault Find mode indicator (model dependent) ▪ StrikeAlert™ warning ▪ Overload warning 																																								
3.9 Audio output tones:	<p>Power / Radio modes: Real Sound™ derived from detected electromagnetic signal</p> <p>Peak / Peak+ modes: Synthesized audio tone proportional to signal strength</p> <p>Guidance mode: Continuous tone when locator is to the left of target, intermittent tone when to the right of target</p> <p>Null mode: Synthesized audio tone proportional to signal strength. Low pitch to left of target, high pitch to right of target</p> <p>StrikeAlert audio warning Audio feedback for menu navigation</p>																																								

3.10 Accessory locate functions:	<p>Locator clamps: Used to identify individual target cable(s) in a bundle or cabinet using signal strength read-out</p> <p>Stethoscopes: Used to identify individual target cable(s) in a bundle or confined space such as a cabinet using signal strength read-out</p>
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4. Locate Function Enhancements

4.1 StrikeAlert:	Audio and visual warning when a cable or pipe less than 12" / 30cm deep is detected. Operates in Active and Passive locating modes
4.2 Dynamic Overload Protection™:	40dB, automatic <ul style="list-style-type: none"> Automatically manages the system gain to compensate for strong signals e.g. from mains power or substations, to enable accurate locating
4.3 Simultaneous depth and current readout:	Both utility depth and locate signal current are displayed simultaneously, giving the operator more information to help them to follow the target utility
4.4 Fault Find:	Apply a Fault Find signal with a Tx-5 and Tx-10 transmitter, then use an accessory A-Frame to detect and pinpoint insulation faults (RD7100PL, PLG, TL, TLG models only) <p>Fault find accuracy: Metric: 100mm Imperial: 4"</p>
4.5 Peak+ mode:	Use the accurate Peak bargraph, and add either proportional Guidance arrows for faster locating, or Null arrows to check for the presence of distortion

5. Configurability

5.1 Option selection:	All options can be enabled or disabled on the locator or using the RD Manager PC software
5.2 Languages supported:	Fourteen: English, French, German, Dutch, Polish, Czech, Slovakian, Spanish, Portuguese, Swedish, Italian, Turkish, Russian, Hungarian
5.3 Mains power network options:	50 Hz or 60 Hz
5.4 Mode selection:	All locate modes with the exception of Peak Mode can be individually enabled or disabled
5.5 Active frequency selection:	All active frequencies available can be individually enabled or disabled
5.6 Passive mode selection:	All passive modes can be individually enabled or disabled
5.7 StrikeAlert:	Enable / disable
5.8 Peak+ arrow selection:	Guidance arrows or Null arrows Selected using the locator menu or with a long press of the antenna key
5.9 GNSS ('GPS') settings:	Internal / Off / Reset. SBAS On / Off
5.10 Time / date setting:	Correct or update locator real-time clock using the RD Manager PC software or GNSS signals (GPS/Logging enabled units)

6. Connectivity

6.1 Wired connections	<p>Mini-USB: Connect to a PC to configure and update locator, and to retrieve usage log and survey measurement data</p> <p>3.5mm Stereo jack: Connect wired headphones</p> <p>Accessory port: Connect Radiodetection accessories</p>
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7. Data capabilities and GNSS ('GPS')

7.1 Usage-logging and GNSS ('GPS'):	RD7100 MODEL	SL	DL	DLG	PL	PLG	TL	TLG
	Usage-logging			●		●		●
	On-board GNSS ('GPS')			●		●		●
7.2 Usage-logging memory:	4 GB							
7.3 Usage-logging capacity:	Over 500 days, measured at 8 hours use per day							
7.4 Usage-logging capture rate:	1/ second							
7.5 Usage parameters logged:	Serial number Log reference and id Operating mode Locate frequency Sonde/line Signal strength Gain setting Depth Current Accessory in use Antenna mode Arrows readout Compass angle Overload status Dynamic Overload Protection Status	Keys pressed Audio status Volume Menu in use Battery status User warnings status StrikeAlert status Fault find arrow SideStep status Language Depth units Power setting Compass setting Logging Units: Date and time	With a GNSS fix: Latitude Longitude Altitude GNSS date and time Horizontal Dilution Geoid DGPS Time and ID Geoid Units GNSS fix Number of satellites Altitude units Time reference					

8. Power options

8.1 Alkaline battery options:	2 × D-Cell (MN1300 / LR20) alkaline batteries (standard)	
8.2 Rechargeable battery options:	Custom Lithium-Ion (Li-Ion) battery pack 2 × D-Cell (MN1300 / LR20) Nickel Metal Hydride (NiMH) batteries	
8.3 Battery run-time (continuous) ⁴ :	Li-Ion pack:	35 hours
	2 × Alkaline D-Cells	13 hours
8.4 Battery chemistry identification:	Lithium-Ion pack:	Automatic sensing
	NiMH / Alkaline:	Software switchable
8.5 Charging options (Li-Ion pack):	Mains charger:	100-250 Volts AC, 50/60 Hz
	Automotive charger:	12-24V DC
8.6 Charging time (Li-Ion pack):	3 hours to 80% from empty with maintenance trickle charging thereafter	

9. Physical Characteristics

9.1 Design:	Ergonomic, balanced and lightweight design for comfortable use during extended surveys
9.2 Construction:	Injection Molded ABS Plastic
9.3 Weight:	With Lithium-Ion battery pack fitted: Metric: 1.8kg Imperial: 4.0lb With D-cell alkaline batteries fitted: Metric: 1.9kg Imperial: 4.2lb
9.4 Ingress Protection rating:	IP65 Protected against dust ingress and jets of water ⁵ applied from any direction
9.5 Display type:	High contrast custom made monochrome LCD
9.6 Audio options:	Built-in waterproofed speaker 3.5mm headphone socket

● Available feature

9.7 Operating temperature ⁶ :	Metric: -20 to 50°C Imperial: 14 to 122°F
9.8 Storage temperature:	Metric: -20 to 70°C Imperial: 14 to 158°F
9.9 Unit dimensions:	Metric: 648mm x 286mm x 125mm Imperial: 25.5" x 11.3" x 4.9"
9.10 Shipping dimensions:	Metric: 700mm x 260mm x 330mm Imperial: 27.6" x 10.2" x 13"
9.11 Shipping weight (with batteries fitted):	Metric: 2.6kg Imperial: 5.7lb

10. RD Manager™ Supporting PC Software

10.1 Operating System Compatibility:	Microsoft® Windows® XP, 7, 8, 8.1, 32 and 64-bit versions
10.2 Locator system compatibility:	Radiodetection RD7100 and RD8100 Precision Locators RD7000+ and RD8000 Cable, Pipe and Marker Locators
10.3 Functions:	<ul style="list-style-type: none"> ▪ Locator configuration ▪ eCert™ remote calibration certification ▪ Factory calibration certificate retrieval ▪ Usage-logging data collation and export ▪ User account management ▪ CALSafe™ maintenance schedule enforcement ▪ Product registration for extended warranty ▪ Locator software update ▪ Contact Radiodetection ▪ Book a service
10.4 Data export formats:	.kml for Google® Maps .csv for database and spreadsheet applications .xls / .xlsx for Microsoft® Excel®
10.5 KML data export options:	Filter usage-logging and survey measurement points on Google® maps. Select data to be tagged. Customize icon type / color, label type / color, line type / color

11. Warranty and Maintenance

11.1 Manufacturer's warranty duration:	3 years standard, on registration
11.2 Recommended calibration and maintenance schedule:	Annual, or at the beginning / end of a lease period if earlier
11.3 eCert remote calibration:	<ul style="list-style-type: none"> ▪ Remote calibration certification using an internet connection to Radiodetection ▪ Recommended schedule: annual, or at the beginning / end of a lease period
11.4 CALSafe™:	<ul style="list-style-type: none"> ▪ Can be enabled to prevent the locator operating when beyond a defined calibration / maintenance schedule ▪ Disabled by default ▪ 30-day countdown to calibration due date
11.5 Enhanced Self-Test:	On-unit Applies test signals to locate circuitry to confirm correct operation, as well as the typical tests for screen and DSP functions. Recommended schedule: weekly, or before each use.
11.6 Storage recommendation:	Store in a clean and dry environment. Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged
11.7 Cleaning:	Clean with a soft, moistened cloth. Do not use <ul style="list-style-type: none"> ▪ Abrasive materials or chemicals ▪ High pressure jets of water If using this equipment in foul water systems or other areas where biological hazards may be present, use an appropriate disinfectant.

12. Certification and Compliance

12.1 Standards:	
<i>Safety:</i>	EN 61010-1:2010
<i>EMC:</i>	EN 61326-1:2013 EN 300 330-2 (V1.5.1) EN 300 440-2 (V1.4.1) EN 301 489-3 (V1.6.1) EN 301 489-17 (V2.2.1)
<i>Environmental:</i>	EN 60529 1992 A2 2013 EN 60068-2-64:2008 Test Fh ESTI EN 300 019-2-2:1999 (per table 6) EN 60068-2-27:2009 (Test Ea) ESTI EN 300 019-2-2:1999 (per table 6)
12.2 European directives:	R&TTE Directive 1999/5/EC Low Voltage Directive: 2006/95/EC EMC Directive: 2004/108/EC Declaration of conformity is available from www.radiodetection.com
12.3 Environmental:	WEEE compliant ROHS compliant
12.4 Manufacturing:	ISO 9001:2008

13. Compatible Accessories

Accessory	Part description	Part number
13.1 Lithium-Ion battery packs	Li-Ion rechargeable battery mains kit (Includes mains charger) Li-Ion rechargeable battery pack (no charger)	10/RX-MBATPACK-LION-K 10/RX-BATPACK-LION
13.2 Lithium-Ion battery chargers	Li-Ion automotive charger Li-Ion mains charger	10/RX-ACHARGER-LION 10/RX-MCHARGER-LION
13.3 Alkaline battery trays	2 × D Cell battery tray (MN1300 / LR20)	10/RX-2DCELL-TRAY
13.4 Transportation and storage accessories – <i>For combined locator and transmitter</i>	Soft Carry Bag Wheeled Flight Case Hard Case	10/LOCATORBAG 10/RD7K8KCASE 10/RD7K8KCASE-USA
13.5 Locator signal clamps – <i>For identification and location of utilities</i>	Metric: 50mm Locator Clamp Imperial: 2" Locator Clamp Metric: 100mm Locator Clamp Imperial: 2" Locator Clamp Metric: 130mm Locator Clamp Imperial: 5" Locator Clamp	10/RX-CLAMP-50 10/RX-CLAMP-2 10/RX-CLAMP-100 10/RX-CLAMP-4 10/RX-CLAMP-130 10/RX-CLAMP-5
13.6 Signal stethoscopes – <i>To locate and identify individual utilities e.g. within walls, congested areas or when cables/utilities are in close proximity to each other</i>	High Gain Stethoscope Large Stethoscope Small Stethoscope	10/RX-STETHOSCOPE-HG 10/RX-STETHOSCOPE-L 10/RX-STETHOSCOPE-S

Accessory	Part description						Part number
13.7 Sondes <i>Battery powered signal transmitters for tracing or locating non-conductive utilities</i>	Diameter		Range		Freq (Hz)		
	mm	In	m	Ft			
	S6 Microsonde	6	¼	2	6½	33k	10/SONDE-MICRO-33
	S9 Minisonde	9	3/8	4	13	33k	10/SONDE-MINI-33
	S13 Super Small Sonde	13	½	2	6½	33k	10/SONDE-S13-33
	S18 Small Sonde	18	¾	4	14	33k	10/SONDE-S18A-33
	Standard C-Sonde	39	1½	5	16½	33k	10/SONDE-STD-33
						8	10/SONDE-STD-8
						512	10/SONDE-STD-512
	Slim Sonde	22	7/8	3.5	11½	33k	10/SONDE-SLIM-33
Sewer Sonde	64	2½	8	26	33k	10/SONDE-SEWER-33	
Super Sonde	64	2½	15	50	33k	10/SONDE-SUPER-33	
Flexi Sonde	23	7/8	6	20	512	10/SONDE-BENDI-512	
13.8 Submersible antennas:	640 / 512Hz Submersible DD Antenna 8kHz Submersible DD Antenna						10/RX-SUBANTENNA-640 10/RX-SUBANTENNA-8K
13.9 FlexiTrace™ <i>– Use with a transmitter to trace small diameter pipes</i>	FlexiTrace 50m / 165' FlexiTrace 80m / 260'						10/TRACE50-GB 10/TRACE80-GB
13.10 Flexrods <i>– Fibreglass rod used for propelling Radiodetection sondes through pipes to trace the path and locate blockages</i>	Length		Diameter				
	m	Ft	mm	In			
	50	160	4.5	3/16	10/FLEXRODF50-4.5		
	80	260	4.5	3/16	10/FLEXRODF80-4.5		
	50	160	7	¼	10/FLEXRODF50-7		
	100	320	7	¼	10/FLEXRODF100-7		
	150	485	7	¼	10/FLEXRODF150-7		
	60	195	9	3/8	10/FLEXRODF60-9		
	120	390	9	3/8	10/FLEXRODF120-9		
13.11 A-Frame – <i>Used for locating sheath faults on cables and coating defects on pipelines</i>	A-Frame (includes A-Frame Lead) A-Frame Bag						10/RX-AFRAME 10/RX-AFRAME-BAG
13.12 Headphones	Recommended for use in noisy environments						10/RX-HEADPHONES
13.13 Warning Triangle	Three sided folding warning sign						10/WARNING-TRIANGLE
13.14 Calibration Certificates	Locator Calibration Certificate, per unit (request with initial locator order) eCert™ Calibration Credit						97/RX-CALCERT 10/RX-ECERT

All specifications are measured in test conditions, at 21°C / 70°F, and fitted with 2 × good quality alkaline batteries unless otherwise noted.

1 Based on volumetric testing at a known fixed depth. True depth accuracy depends on factors such as ground composition, utility characteristics and the locate frequency / signal strength employed. Always follow local safe digging guidelines.

2 The RD7100 will locate to greater depths in the right conditions, but depth accuracy will be compromised. Depth measurement will not be displayed beyond these depths.

3 Tested with clear line-of-sight. Range is dependent on electrical environment and weather conditions. For optimum range, face the locator toward the transmitter and raise the transmitter 2' / 60cm from the ground.

4 To provide repeatable measurements, run-time is measured with GPS functions switched to 'off'.

5 Water projected by a nozzle at a pressure of 30kPa / 0.3 bar / 4.4 psi in accordance with BS EN 60529 1992 A2 2013

6 At very low temperatures, battery life will be degraded and measurement precision may be reduced.

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RD8100™ Locator Specification



RD8100 Locator Specification

1. Product Summary

1.1 Product Descriptions:	Multi-purpose Precision Locator Cable and Pipe Locator Locate System Receiver Multi-function Precision Locator
1.2 Intended Use:	Locating the position / path of buried pipes and cables Detecting and pinpointing insulation faults on buried pipes and cables Creating survey records of buried pipes and cable locations
1.3 Standard Equipment:	Locator Quickstart guide Mini USB 2.0 compliant data cable

2. Performance

2.1 Sensitivity:	6E-15 Tesla 5 μ A at 1 meter (33kHz)
2.2 Dynamic range:	140dB rms/ \sqrt Hz
2.3 Selectivity:	120dB/Hz
2.4 Depth measurement precision ¹ :	\pm 3%
2.5 Locate accuracy:	\pm 5% of depth
2.6 Active Locate filter bandwidth:	\pm 3Hz, 0 < 1kHz \pm 10Hz, \geq 1kHz
2.7 Start-up time:	<1 second
2.8 Maximum depth readout ² :	Metric: Cable / Pipe: 30m Sonde: 19.5m Imperial: Cable / Pipe: 98' Sonde: 64'

3. Locate Functions

3.1 Active Locate Modes:	Five: <ul style="list-style-type: none">▪ Peak▪ Peak+™ (choice of combined Peak & Guidance or Peak & Null)▪ Guidance▪ Broad Peak™▪ Null
3.2 Gain control	Guidance Mode: Automatic Other modes: Manual gain using "+" or "-" with one touch to return to center (50% of Full Scale)
3.3 Custom locate frequencies	Up to 5 additional frequencies in the range 50Hz to 1kHz at 1Hz resolution

3.4 Active locate frequencies:

Up to 24:

RD8100 MODEL	PXL	PXLG	PDL	PDLG	PTL	PTLG
Custom frequencies	5	5	5	5	5	5
ELF (98/128Hz)			●	●	●	●
512Hz			●	●	●	●
570Hz			●	●	●	●
577Hz	●	●	●	●	●	●
640Hz	●	●	●	●	●	●
760Hz			●	●	●	●
870Hz	●	●	●	●	●	●
920Hz			●	●		
940Hz	●	●	●	●	●	●
1090Hz					●	●
1450Hz					●	●
4kHz (4096Hz)	●	●				
8kHz (8192Hz)	●	●	●	●	●	●
8440Hz					●	●
9.8kHz (9820Hz)			●	●	●	●
33kHz (32768Hz)	●	●	●	●	●	●
65kHz (65536Hz)	●	●	●	●	●	●
82kHz (82000Hz)					●	●
83kHz (83077Hz)	●	●	●	●	●	●
131kHz (131072Hz)	●	●	●	●	●	●
200kHz (200000Hz)	●	●	●	●	●	●

3.5 Sonde Frequencies:

All models: Four
 ▪ 512Hz
 ▪ 640Hz
 ▪ 8kHz (8192Hz)
 ▪ 33kHz (32768Hz)

3.6 Fault Find:

Locate insulation sheath faults on pipes and cables to 10cm / 4" accuracy using the accessory A-Frame and a compatible transmitter

RD8100 MODEL	PXL	PXLG	PDL	PDLG	PTL	PTLG
8kHz Fault Find			●	●	●	●
CD Fault Find			●	●	●	●

3.7 Current Direction™ (CD) Signal Pairs:

Confirm operator is following the target pipe or cable with CD arrows and a compatible transmitter

RD8100 MODEL	PXL	PXLG	PDL	PDLG	PTL	PTLG
219.9Hz / 439.8Hz					●	●
256Hz / 512Hz			●	●	●	●
280Hz / 560Hz					●	●
285Hz / 570Hz			●	●	●	●
320Hz / 640Hz			●	●	●	●
380Hz / 760Hz			●	●	●	●
460Hz / 920Hz			●	●		
680Hz / 340Hz					●	●
800Hz / 400Hz					●	●
920Hz / 460Hz					●	●
968Hz / 484Hz					●	●
1168Hz / 584Hz					●	●
1248Hz / 624Hz					●	●
4096Hz / 8192Hz 4kCD			●	●	●	●

3.8 Passive Locate Modes:	<table border="1"> <thead> <tr> <th>RD8100 MODEL</th> <th>PXL</th> <th>PXLG</th> <th>PDL</th> <th>PDLG</th> <th>PTL</th> <th>PTLG</th> </tr> </thead> <tbody> <tr> <td>Power</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Radio</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>CPS (Cathodic Protection System)</td> <td></td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>CATV (Cable TV)</td> <td></td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Passive Avoidance (Combined Power + Radio)</td> <td></td> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </tbody> </table>	RD8100 MODEL	PXL	PXLG	PDL	PDLG	PTL	PTLG	Power	●	●	●	●	●	●	Radio	●	●	●	●	●	●	CPS (Cathodic Protection System)			●	●	●	●	CATV (Cable TV)			●	●	●	●	Passive Avoidance (Combined Power + Radio)			●	●	●	●
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CATV (Cable TV)			●	●	●	●																																					
Passive Avoidance (Combined Power + Radio)			●	●	●	●																																					
3.9 Power Filters™ function:	<p>Switch out of sensitive Power Mode to locate on any of 5 individual mains harmonic frequencies:</p> <table border="1"> <thead> <tr> <th>HARMONIC</th> <th>50 Hz regions</th> <th>60 Hz regions</th> </tr> </thead> <tbody> <tr> <td>Primary</td> <td>50 Hz</td> <td>60 Hz</td> </tr> <tr> <td>3rd</td> <td>150 Hz</td> <td>180 Hz</td> </tr> <tr> <td>5th</td> <td>250 Hz</td> <td>300 Hz</td> </tr> <tr> <td>7th</td> <td>350 Hz</td> <td>420 Hz</td> </tr> <tr> <td>9th</td> <td>450 Hz</td> <td>540 Hz</td> </tr> </tbody> </table>	HARMONIC	50 Hz regions	60 Hz regions	Primary	50 Hz	60 Hz	3rd	150 Hz	180 Hz	5th	250 Hz	300 Hz	7th	350 Hz	420 Hz	9th	450 Hz	540 Hz																								
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3.10 Information displayed:	<ul style="list-style-type: none"> ▪ Signal strength - moving bar graph and numeric value ▪ Mode indication (Peak, Null, Guidance, Broad Peak, Peak+ with option of Guidance arrows or Null arrows) ▪ Line or Sonde locate type ▪ Proportional left/right indication ▪ Compass: full 360° line direction indicator ▪ Accessories in use indication ▪ Accessory specific custom screen ▪ Depth and current readout (Line location) ▪ Depth readout (Sonde location) ▪ Gain level (in dB) ▪ Frequency selected ▪ Battery condition ▪ Speaker volume ▪ Operating frequency ▪ Bluetooth status ▪ GPS satellites in view (where fitted) ▪ GPS status (where fitted) ▪ Configuration menu and submenus ▪ Software version ▪ Last calibration date ▪ Survey measurement counter ▪ Current Direction mode indicator ▪ Current Direction arrows ▪ Fault Find mode indicator ▪ Transmitter communication status ▪ Transmitter standby status ▪ StrikeAlert™ warning ▪ Overload warning 																																										
3.11 Audio output tones:	<p>Power / Passive Avoidance / Radio modes: Real Sound™ derived from detected electromagnetic signal</p> <p>Peak / Peak+ modes and CPS / CATV modes: Synthesized audio tone proportional to signal strength</p> <p>Guidance mode: Continuous tone when locator is to the left of target, intermittent tone when to the right of target</p> <p>Null mode: Synthesized Audio tone proportional to signal strength. Low pitch to left of target, high pitch to right of target</p> <p>StrikeAlert audio warning: Audio feedback for menu navigation</p>																																										
3.12 Accessory locate functions:	<p>Locator clamps: Used to identify individual target cable(s) in a bundle or cabinet using signal strength read-out</p> <p>Stethoscopes: Used to identify individual target cable(s) in a bundle or confined space such as a cabinet using signal strength read-out</p> <p>CD / CM clamp: Used to measure locate current and to confirm target cable using Current Direction</p>																																										

4. Locate Function Enhancements

4.1 StrikeAlert:	Audio and visual warning when a cable or pipe less than 30cm deep is detected. Operates in Active and Passive locating modes
4.2 Dynamic Overload Protection™:	40dB, automatic <ul style="list-style-type: none"> Automatically manages the system gain to compensate for strong signals e.g. from mains power or substations, to enable accurate locating
4.3 Current Direction™ (CD):	<ul style="list-style-type: none"> Measures the direction of current flowing in buried pipes or cables to ensure that an operator is able to identify and follow the target utility Provides operator with arrows indicating the direction of current flowing in the located pipe or cable to confirm that they are following the target utility
4.4 iLOC™:	Metric: Remote transmitter control from up to 450m away ³ Imperial: Remote transmitter control from up to 1400' away ³ Control transmitter frequency, power level and SideStep
4.5 SideStep™:	Enables locating where other signals are interfering, and without compromising the optimum locate frequency Remotely shifts the locate and transmitter frequency by several Hz, out of the bandwidth of other locate signals that may be interfering with the locate
4.6 Simultaneous depth and current readout:	Both utility depth and locate signal current are displayed simultaneously, giving the operator more information to help them to follow the target utility
4.7 Survey Measurements:	Store up to 1,000 survey points within the locator, and append GPS data from internal GPS (if fitted) or external GNSS sources over Bluetooth® Export data immediately or as a batch over Bluetooth
4.8 Fault Find:	Apply a Fault Find signal with a Tx-5 and Tx-10 transmitter, then use an accessory A-Frame to detect and pinpoint insulation faults Fault find accuracy: Metric: 100mm Imperial: 4"
4.9 4kHz locate frequency and 4kHz CD:	Designed for tracing higher impedance lines such as twisted pair telecoms or street lighting over distance Combine with Current Direction to help trace the target utility through dense or complex infrastructure
4.10 Peak+ mode:	Use the accurate Peak bargraph, and add either proportional Guidance arrows for faster locating, or Null arrows to check for the presence of distortion
4.11 Integrated GPS option:	Faster surveying using integrated GPS – no need for a separate hand-held device

5. Configurability

5.1 Option selection:	All options can be enabled or disabled on the locator or using the RD Manager PC software
5.2 Languages supported:	Fourteen: English, French, German, Dutch, Polish, Czech, Slovakian, Spanish, Portuguese, Swedish, Italian, Turkish, Russian, Hungarian
5.3 Mains power network options:	50 Hz or 60 Hz
5.4 Mode selection:	All locate modes with the exception of Peak Mode can be individually enabled or disabled
5.5 Active frequency selection:	All active frequencies available can be individually enabled or disabled
5.6 Passive mode selection:	All passive modes can be individually enabled or disabled
5.7 StrikeAlert:	Enable / disable
5.8 Peak+ arrow selection:	Guidance arrows or Null arrows Selected using the locator menu or with a long press of the antenna key
5.9 GNSS ('GPS') settings:	Internal / External (connect over Bluetooth) / Off / Reset SBAS On / Off
5.10 Bluetooth:	On / Off
5.11 Data export protocols supported:	PPP / choice of 3 ASCII formats. Optionally append positional data
5.12 Time / date setting:	Correct or update locator real-time clock using the RD Manager PC software or GNSS signals
5.13 CD Reset:	Reset CD phase analysis with a single long press of the frequency key

6. Connectivity

6.1 Wireless connections:	Bluetooth class 1
6.2 iLOC™ remote transmitter control range ³ :	Metric: Up to 450m Imperial: Up to 1400'
6.3 iLOC remote transmitter control functions:	Set transmitter frequency Set transmitter power output level Transmitter standby SideStep
6.4 Wired connections	Mini-USB: Connect to a PC to configure and update locator, and to retrieve usage log and survey measurement data 3.5mm Stereo jack: Connect wired headphones Accessory port: Connect Radiodetection accessories

7. Data capabilities and GNSS ('GPS')

7.1 On-board GNSS ('GPS') module option:	<p>GNSS data automatically added to Survey Measurements every time locate data is saved, and every second on usage-logging data</p> <p>Accurate to 3m CEP with SBAS enhancement available</p> <p>Links to GPS, GLONASS and Galileo networks</p> <p>Positional data enhancement systems (where available)</p> <ul style="list-style-type: none"> ▪ WAAS – North America ▪ EGNOS – Europe ▪ MSAS – Japan ▪ SBAS (satellite based augmentation system) <p>SBAS can be enabled or disabled in locator menu</p>	
7.2 Link to external GNSS ('GPS'):	<p>Over Bluetooth</p> <ul style="list-style-type: none"> ▪ Connect to an external GNSS enabled device to combine survey measurements with that device's GNSS data on the external device 	
7.3 External GNSS position read-in to locator memory:	<p>Over Bluetooth from compatible mobile device / PDA running the SurveyCert+™ app.</p> <ul style="list-style-type: none"> ▪ Connect to an external GNSS device to read positional positioning from that device and combine with the locator's survey measurement data on board the locator 	
7.4 Survey measurement capacity:	Up to 1,000 data records	
7.5 Survey measurement data captured:	<p>Standard data:</p> <p>Log #</p> <p>Survey Reference</p> <p>Antenna Mode</p> <p>Depth</p> <p>Current (mA)</p> <p>Frequency in use (Hz)</p> <p>Sonde/Line</p> <p>Signal Strength (dBµV and %)</p> <p>Signal Strength (%)</p> <p>Gain Setting (dB)</p> <p>Compass (deg)</p> <p>Arrow readout</p> <p>CD Phase (deg)</p> <p>Accessory Type</p> <p>Battery level</p> <p>Volume</p> <p>Overload Flag</p> <p>Usage-Logging Units:</p> <p>Date and Time</p>	<p>With Internal or External GNSS Fix:</p> <p>GPS Mode</p> <p>GPS Date and Time</p> <p>GPS Distance (m)</p> <p>Latitude Angle (deg)</p> <p>Latitude Direction</p> <p>Longitude Angle (deg)</p> <p>Longitude Direction</p> <p>GPS Fix</p> <p>Satellites in use</p> <p>Horizontal Dilution</p> <p>Altitude Value (m)</p> <p>Altitude Units</p> <p>Geoid Value (m) and Units</p> <p>DGPS Time</p> <p>DGPS ID</p> <p>Time Reference</p> <p>GPS Mode</p> <p>GPS Date and Time</p> <p>GPS Distance (m)</p> <p>Latitude Angle (deg)</p>

7.6 Survey measurement export options:	Bluetooth – ‘live,’ per measurement Bluetooth – batch export USB – selectable / batch export						
7.7 Bluetooth survey measurement data protocol options:	PPP ASCII (choice of 3 formats) Optional GPS data appended						
7.8 Usage-logging and GNSS ('GPS'):	RD8100 MODEL	PXL	PXLG	PDL	PDLG	PTL	PTLG
	Usage-logging		●		●		●
	On-board GNSS ('GPS')		●		●		●
7.9 Usage-logging memory:	4 GB						
7.10 Usage-logging capacity:	Over 500 days, measured at 8 hours use per day						
7.11 Usage-logging capture rate:	1/ second						
7.12 Usage parameters logged:	Serial number Log reference and id Operating mode Locate frequency Sonde/line Signal strength Gain setting Depth Current Accessory in use Antenna mode Arrows readout Compass angle CD phase Overload status Dynamic Overload Protection Status	Keys pressed Audio status Volume Menu in use Battery status User warnings status StrikeAlert status Bluetooth status Fault find arrow Sidestep status Language Depth units Power setting Compass setting CD reset status Logging Units: Date and time	With a GNSS fix: Latitude Longitude Altitude GNSS mode GNSS date and time Horizontal Dilution Geoid DGPS Time and ID Geoid Units GNSS fix Number of satellites Altitude units Time reference				

8. Power options

8.1 Alkaline battery options:	2 × D-Cell (MN1300 / LR20) alkaline batteries (standard)	
8.2 Rechargeable battery options:	Custom Lithium-Ion (Li-Ion) battery pack 2 × D-Cell (MN1300 / LR20) Nickel Metal Hydride (NiMH) batteries	
8.3 Battery run-time (continuous) ⁴ :	Li-Ion pack: 35 hours 2 × Alkaline D-Cells 13 hours	
8.4 Battery chemistry identification:	Lithium-Ion pack: Automatic sensing NiMH / Alkaline: Software switchable	
8.5 Charging options (Li-Ion pack):	Mains charger: 100-250 Volts AC, 50/60 Hz Automotive charger: 12-24V DC	
8.6 Charging time (Li-Ion pack):	3 hours to 80% from empty with maintenance trickle charging thereafter	

9. Physical Characteristics

9.1 Design:	Ergonomic, balanced and lightweight design for comfortable use during extended surveys
9.2 Construction:	Injection Molded ABS Plastic
9.3 Weight:	With Lithium-Ion battery pack fitted: Metric: 1.8kg Imperial: 4.0lb With D-cell alkaline batteries fitted: Metric: 1.9kg Imperial: 4.2lb

9.4 Ingress Protection rating:	IP65 Protected against dust ingress and jets of water ⁵ applied from any direction
9.5 Display type:	High contrast custom made monochrome LCD
9.6 Audio options:	Built-in waterproofed speaker 3.5mm headphone socket
9.7 Operating temperature ⁶ :	Metric: -20 to 50°C Imperial: 14 to 122°F
9.8 Storage temperature:	Metric: -20 to 70°C Imperial: 14 to 158°F
9.9 Unit dimensions:	Metric: 648mm x 286mm x 125mm Imperial: 25.5" x 11.3" x 4.9"
9.10 Shipping dimensions:	Metric: 700mm x 260mm x 330mm Imperial: 27.6" x 10.2" x 13"
9.11 Shipping weight (with batteries fitted):	Metric: 2.6kg Imperial: 5.7lb

10. RD Manager™ Supporting PC Software

10.1 Operating System Compatibility:	Microsoft® Windows® XP, 7, 8, 8.1, 32 and 64-bit versions
10.2 Locator system compatibility:	Radiodetection RD8100 Precision Locators RD7000+ and RD8000 Cable, Pipe and Marker Locators
10.3 Functions:	<ul style="list-style-type: none"> ▪ Locator configuration ▪ eCert™ remote calibration certification ▪ Factory calibration certificate retrieval ▪ Usage-logging data collation and export ▪ Survey measurements data collation and export ▪ User account management ▪ CALSafe™ maintenance schedule enforcement ▪ Product registration for extended warranty ▪ Locator software update ▪ Contact Radiodetection ▪ Book a service
10.4 Data export formats:	.kml for Google® Maps .csv for database and spreadsheet applications .xls / .xlsx for Microsoft® Excel®
10.5 KML data export options:	Filter usage-logging and survey measurement points on Google® maps. Select data to be tagged. Customize icon type / color, label type / color, line type / color

11. Warranty and Maintenance

11.1 Manufacturer's warranty duration:	3 years standard, on registration
11.2 Recommended calibration and maintenance schedule:	Annual, or at the beginning / end of a lease period if earlier
11.3 eCert remote calibration:	<ul style="list-style-type: none"> ▪ Remote calibration certification using an internet connection to Radiodetection ▪ Recommended schedule: annual, or at the beginning / end of a lease period
11.4 CALSafe™:	<ul style="list-style-type: none"> ▪ Can be enabled to prevent the locator operating when beyond a defined calibration / maintenance schedule ▪ Disabled by default ▪ 30-day countdown to calibration due date
11.5 Enhanced Self-Test:	On-unit Applies test signals to locate circuitry to confirm correct operation, as well as the typical tests for screen and DSP functions. Recommended schedule: weekly, or before each use.

11.6 Storage recommendation:	Store in a clean and dry environment. Ensure all terminals and connection sockets are clean, free of debris and corrosion and are undamaged
11.7 Cleaning:	Clean with a soft, moistened cloth. Do not use <ul style="list-style-type: none"> ▪ Abrasive materials or chemicals ▪ High pressure jets of water If using this equipment in foul water systems or other areas where biological hazards may be present, use an appropriate disinfectant.

12. Certification and Compliance

12.1 Standards:	
<i>Safety:</i>	EN 61010-1:2010
<i>EMC:</i>	EN 61326-1:2013 EN 300 330-2 (V1.5.1) EN 300 440-2 (V1.4.1) EN 301 489-3 (V1.6.1) EN 301 489-17 (V2.2.1)
<i>Environmental:</i>	EN 60529 1992 A2 2013 EN 60068-2-64:2008 Test Fh ESTI EN 300 019-2-2:1999 (per table 6) EN 60068-2-27:2009 (Test Ea) ESTI EN 300 019-2-2:1999 (per table 6)
12.2 European directives:	R&TTE Directive 1999/5/EC Low Voltage Directive: 2006/95/EC EMC Directive: 2004/108/EC Declaration of conformity is available from www.radiodetection.com
12.3 Radio:	FCC, IC
12.4 Environmental:	WEEE compliant ROHS compliant
12.5 Manufacturing:	ISO 9001:2008

13. Compatible Accessories

Accessory	Part description	Part number
13.1 Lithium-Ion battery packs	Li-Ion rechargeable battery mains kit (Includes mains charger) Li-Ion rechargeable battery pack (no charger)	10/RX-MBATPACK-LION-K 10/RX-BATPACK-LION
13.2 Lithium-Ion battery chargers	Li-Ion automotive charger Li-Ion mains charger	10/RX-ACHARGER-LION 10/RX-MCHARGER-LION
13.3 Alkaline battery trays	2 × D Cell battery tray (MN1300 / LR20)	10/RX-2DCELL-TRAY
13.4 Transportation and storage accessories – For combined locator and transmitter	Soft Carry Bag Wheeled Flight Case Hard Case	10/LOCATORBAG 10/RD7K8KCASE 10/RD7K8KCASE-USA
13.5 Locator signal clamps – For identification and location of utilities	Metric: 50mm Locator Clamp Imperial: 2" Locator Clamp Metric: 100mm Locator Clamp Imperial: 2" Locator Clamp Metric: 130mm Locator Clamp Imperial: 5" Locator Clamp CD and Current Measurement Clamp	10/RX-CLAMP-50 10/RX-CLAMP-2 10/RX-CLAMP-100 10/RX-CLAMP-4 10/RX-CLAMP-130 10/RX-CLAMP-5 10/RX-CD-CLAMP

Accessory	Part description					Part number	
13.6 Signal stethoscopes – To locate and identify individual utilities e.g. within walls, congested areas or when cables/utilities are in close proximity to each other	High Gain Stethoscope Large Stethoscope Small Stethoscope CD Stethoscope					10/RX-STETHOSCOPE-HG 10/RX-STETHOSCOPE-L 10/RX-STETHOSCOPE-S 10/RX-CD-STETHOSCOPE	
13.7 Sondes Battery powered signal transmitters for tracing or locating non-conductive utilities	Diameter		Range		Freq (Hz)		
	mm	In	m	Ft			
	S6 Microsonde	6	¼	2	6½	33k	10/SONDE-MICRO-33
	S9 Minisonde	9	3/8	4	13	33k	10/SONDE-MINI-33
	S13 Super Small Sonde	13	½	2	6½	33k	10/SONDE-S13-33
	S18 Small Sonde	18	¾	4	14	33k	10/SONDE-S18A-33
	Standard C-Sonde	39	1½	5	16½	33k	10/SONDE-STD-33
						8	10/SONDE-STD-8
						512	10/SONDE-STD-512
	Slim Sonde	22	7/8	3.5	11½	33k	10/SONDE-SLIM-33
	Sewer Sonde	64	2½	8	26	33k	10/SONDE-SEWER-33
	Super Sonde	64	2½	15	50	33k	10/SONDE-SUPER-33
Flexi Sonde	23	7/8	6	20	512	10/SONDE-BENDI-512	
13.8 Submersible antennas:	640 / 512Hz Submersible DD Antenna 8kHz Submersible DD Antenna					10/RX-SUBANTENNA-640 10/RX-SUBANTENNA-8K	
13.9 FlexiTrace™ – Use with a transmitter to trace small diameter pipes	FlexiTrace 50m / 165' FlexiTrace 80m / 260'					10/TRACE50-GB 10/TRACE80-GB	
13.10 Flexrods – Fibreglass rod used for propelling Radiodetection sondes through pipes to trace the path and locate blockages	Length		Diameter				
	m	Ft	mm	In			
	50	160	4.5	3/16	10/FLEXRODF50-4.5		
	80	260	4.5	3/16	10/FLEXRODF80-4.5		
	50	160	7	¼	10/FLEXRODF50-7		
	100	320	7	¼	10/FLEXRODF100-7		
	150	485	7	¼	10/FLEXRODF150-7		
	60	195	9	3/8	10/FLEXRODF60-9		
	120	390	9	3/8	10/FLEXRODF120-9		
13.11 A-Frame – Used for locating sheath faults on cables and coating defects on pipelines	A-Frame (includes A-Frame Lead) A-Frame Bag					10/RX-AFRAME 10/RX-AFRAME-BAG	
13.12 Headphones	Recommended for use in noisy environments					10/RX-HEADPHONES	
13.13 Warning Triangle	Three sided folding warning sign					10/WARNING-TRIANGLE	
13.14 PDAs	GPS PDA with SurveyCERT™+					10/RX-PDA	
13.15 Calibration Certificates	Locator Calibration Certificate, per unit (request with initial locator order)					97/RX-CALCERT	
	eCert™ Calibration Credit					10/RX-ECERT	

● Available feature

All specifications are measured in test conditions, at 21°C / 70°F, and fitted with 2 × good quality alkaline batteries unless otherwise noted.

¹ Based on volumetric testing at a known fixed depth. True depth accuracy depends on factors such as ground composition, utility characteristics and the locate frequency / signal strength employed. Always follow local safe digging guidelines.

² The RD8100 will locate to greater depths in the right conditions, but depth accuracy will be compromised. Depth measurement will not be displayed beyond these depths.

³ Tested with clear line-of-sight. Range is dependent on electrical environment and weather conditions. For optimum range, face the locator toward the transmitter and raise the transmitter 2' / 60cm from the ground.

⁴ To provide repeatable measurements, run-time is measured with GPS and Bluetooth functions switched to 'off'

⁵ Water projected by a nozzle at a pressure of 30kPa / 0.3 bar / 4.4 psi in accordance with BS EN 60529 1992 A2 2013

⁶ At very low temperatures, battery life will be degraded and measurement precision may be reduced.



Global locations

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www.radiodetection.com

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http://nl.radiodetection.com

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Groendahlscher Weg 118
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Tel: +49 (0) 28 51 92 37 20
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rd.sales.de@spx.com
http://de.radiodetection.com

ASIA-PACIFIC

Radiodetection (Asia-Pacific)

Room 708, CC Wu Building
302-308 Hennessy Road, Wan Chai
Hong Kong SAR, China
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rd.sales.asiapacific@spx.com
www.radiodetection.com

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Beiqijia Town, Changping District
Beijing 102209, China
Tel: +86 (0) 10 8178 5652
Fax: +86 (0) 10 8178 5662
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http://cn.radiodetection.com

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Yagoona NSW 2199, Australia
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September 16, 2016

City of Parkville
8880 Clark Ave
Parkville, MO 64152

HD Supply Waterworks
2500 NW South Outer RD
Blue Springs, MO 64015
816.229.9604
816.229.9607 fax

QUOTE # 101

Schonstedt Instrument is pleased to offer the following quotation as per your request. If there are any further questions, please contact your local representative or myself at the numbers listed below.

XTpc+ Multi-Frequency pipe & cable locator

QTY EACH EXTENDED

Description:	Detection of energized lines, metallic pipes; various conductive cables, shielding or tracer wires	1	\$3,100.00	\$3,100.00
Includes:	TX5 (5 watt) transmitter; receiver; charger kit direct connectors w/6 ft; ground stake			
Audio:	Adjustable; Continuous control; Peak & Null threshold			
Passive Mode:	Included for 60 Hz energized lines			
Sonde Mode:	512 Hz sonde capable			
Frequency:	Manually Selectable between three - (512 Hz; 33kHz; 82 kHz)			
Power Output:	Adjustable; 1/2, 1, 2 or 5 watt (Conductive Mode Only)			
Tx Display:	Measured - AC; DC; and Resistance; Measurement mode Continuity (mA) in Conductive Mode; Watts Selected Back-lighted display			
Rx Display:	User Friendly & Simplified			
Battery:	Indicates: Signal Strength; Depth; Active Mode; Battery Life Receiver - (1) 9v Lithium; 24 hrs operational life Transmitter - 12V rechargeable NIMH battery pack; 8 hrs intermittent use			
Warranty:	3 years			
Manual	Included			

Accessories - all optional

5" Inductive Clamp	p/n	TM60001	1 \$	415.00	\$ 415.00
Large HD Conductive Clip	p/n	TM7000 -1 (RED) or -2 (BLACK)	1 \$	65.00	\$ 65.00
Small HD Conductive Clip	p/n	TM7000: -1 (RED) or -2 (BLACK)	1 \$	45.00	\$ 45.00
				TOTAL=	\$3,625.00

Please note the following:

- 1) Our quotation is limited to supplying the equipment described above. It does not include any additional cable, supports or other materials except that which are specifically listed above.
- 2) The quotation includes one instruction manual per unit.
- 3) Delivery not included

TERMS: Net 30 days
PROPOSAL VALID: 60 days
SHIPMENT: IN STOCK With Release of Order

Thank you for your interest in Schonstedt Instrument

Best Regards,

Steven West

HD Supply Waterworks
steven.west@hdsupply.com
816.598.3325



Subsurface Solutions

Damage Prevention Experts
www.SubsurfaceSolutions.com

ESTIMATE 18485

Parkville - City of
Ed Gault
CELL 8167417676, EMAIL egault@parkvillemo.gov
8880 Clark Ave
Kansas City,MO 64152

Valid Till:12/22/2016
Quoted By: Travis Beran
Phone: 402-203-4415
Email: travis@subsurfacesolutions.com

S.No.	Product Details	Qty	Price	Total
1.	RX PL Radiodetection RD7100PL Receiver with: - Auto digital depth - 512Hz, 8kHz, 33kHz, 65kHz, Power, Radio modes - Enhanced passive power frequencies - Fault Find mode - Guidance Mode - Peak Plus - Enhanced Self Test - Directional compass - Sonde mode in all frequencies - Current measurement - USB port for free updates - Dynamic Overload Protection - 3 Year Warranty after registration - much more	1	\$2,293.00	\$2,293.00
2.	TX 5 Tx-5 (5 Watt) transmitter	1	\$1,556.00	\$1,556.00
3.	LOCATOR BAG Soft Carry Bag	1	\$157.00	\$157.00
4.	RX BATPACK-LION Li-ion rechargeable battery for RD7100/RD8100 series receivers with AC charger	1	\$342.00	\$342.00
5.	TXLION with AC Charger Li-ion rechargeable battery mains kit (Includes mains charger)	1	\$535.00	\$535.00
			Sub Total	\$4,883.00
			Adjustments	- \$0.00
			Tax	\$0.00
			Grand Total	\$4,883.00

Terms and Conditions

Training included at no extra charge for orders over \$2500. All new equipment holds a 1-year warranty from the manufacturer unless otherwise noted. Radiodetection RD7100 & RD8100 models hold a 3 year warranty after registration. Prices may not include Tax or Shipping. Order Subject to Subsurface Solutions Terms & Conditions. Order Cancellation Fee or Return may be subject to 25% Restocking/Cancellation Fee. Terms: N30 with approved credit or Visa, Mastercard.



ESTIMATE 18327

Parkville - City of
Ed Gault
CELL , EMAIL egault@parkvillemo.gov
8880 Clark Ave
Kansas City,MO

Valid Till:07/22/2016
Quoted By: Travis Beran
Phone: 402-203-4415
Email: travis@subsurfacesolutions.com

S.No	Product Details	Qty	Price	Total
1.	LOCATOR BAG Soft Carry Bag	1	\$157.00	\$157.00
2.	RX BATPACK-LION Li-Ion rechargeable battery for RD7100/RD8100 series receivers with AC charger	1	\$342.00	\$342.00
3.	TXLION with AC Charger Li-Ion rechargeable battery mains kit (Includes mains charger)	1	\$535.00	\$535.00
4.	TX 5 Tx-5 (5 Watt) transmitter	1	\$1,556.00	\$1,556.00
5.	RX PDLG Radiodetection RD8100PDLG Receiver with GPS includes: - Auto digital depth - Internal GPS map & logging - 20+ active frequencies and 4 passive including Power, Radio, CPS and Passive Avoidance Scan - Peak, Null, Peak/Null, & Single Peak mode - Current Direction and more	1	\$3,806.00	\$3,806.00
			Sub Total	\$6,396.00
			Adjustments	-\$0.00
			Tax	\$0.00
			Grand Total	\$6,396.00

Terms and Conditions

Training included at no extra charge for orders over \$2500. All new equipment holds a 1-year warranty from the manufacturer unless otherwise noted. Radiodetection RD7100 & RD8100 models hold a 3 year warranty after registration. Prices may not include Tax or Shipping. Order Subject to Subsurface Solutions Terms & Conditions. Order Cancellation Fee or Return may be subject to 25% Restocking/Cancellation Fee. Terms: N30 with approved credit or Visa, Mastercard.

CITY OF PARKVILLE Policy Report

Date: October 4, 2016

Prepared By:
Alysen Abel
Public Works Director

Reviewed By:
Tim Blakeslee
Assistant to the City Administrator

ISSUE:

Approve a work authorization with North Hills Engineering (Jay Norco) for the design of the Wastewater Treatment Facility (WWTF) headworks screen reconstruction.

BACKGROUND:

The headworks screen handles much of the grit and debris during the sewer treatment process and runs continuously at the Wastewater Treatment Facility (WWTF) plant. The original headworks screen was installed at the WWTF in 2004. After 12 years in service, the screen needs to be either rebuilt or replaced due to regular wear and tear. There is an estimated cost savings of \$50,000 (approximately a 50% cost savings) if the screen were rebuilt rather than replaced completely.

On August 5, 2014, the Board of Aldermen approved a five-year agreement with North Hills Engineering (NHE) for on-call contract engineering services. The agreement allows the City to execute individual work authorizations for supplemental engineering services for specific projects and studies.

This work authorization with North Hills Engineering includes the engineering design, document preparation, bidding, and construction administration of the WWTF headworks screen reconstruction. There will be a separate agenda item for the Board of Aldermen to consider for the construction contract once the engineering design and bid documents are completed.

BUDGET IMPACT:

The Capital Improvements Program (CIP) includes \$50,000 for the design of the WWTF headworks reconstruction, with the design occurring in 2016 and the construction in 2017. This work authorization is within budget at \$3,000.

ALTERNATIVES:

1. Approve the work authorization with North Hills Engineering in the amount of \$3,000.
2. Direct staff to negotiate changes to the work authorization.
3. Do not approve the work authorization.
4. Postpone the item.

STAFF RECOMMENDATION:

Staff recommends approval of the work authorization with North Hills Engineering for the engineering-related work associated with the WWTF headworks screen reconstruction.

POLICY:

Per the Purchasing Policy, Resolution No. 10-02-14, the Finance Committee may authorize purchases up to \$10,000.

ITEM 4C

For 10-10-16

Board of Aldermen - Finance Committee Meeting

SUGGESTED MOTION:

I move to approve Work Authorization No. 68 with North Hills Engineering for the design and project management of the WWTF headworks screen reconstruction in the amount of \$3,000.

ATTACHMENT:

1. Work Authorization

WORK PLANNING / AUTHORIZATION FORM

Number: WA-68

Project / Work Description:

Design and Project Management for the WWTF Headworks Screen Reconstruction.

Purpose: To design and administer construction of repairs/replacement/ rebuilt of the Headworks Screen

This WA covers the design, document preparation, bidding, and construction administration of the screen rebuild

The screen was installed in 2004, and after 12 years of operation requires rebuild.

This screen runs near continuously, and handle much grit and debris.

Rebuilding the screen will save about \$50,000 versus the cost of removal and replacement.

However this work is specialized and the rebuild process must be structured to ensure a good value and quality.

Engineering & Proj. Mgt. Budget \$3,000

Total Construction Budget: \$47,000

Service Provider: North Hills Engineering, Inc.

Terms: Subject to the provisions of the August 5, 2014 Engineering Services Agreement between the City and North Hills Engineering Incorporated

Primary Tasks - Design Phase:

- Project Management and Coordination Meetings with City Staff (2 month project.) 2
- Visit the Site of work to evaluate access, removal, plan for bypass, and schedule. 2
- Perform field measurements verify parts and primary materials. 1
- Review O&M Manuals and submittal data. 3
- Correspond with manufacturer to develop rebuild protocols, identify current parts available. 2
- Prepare preliminary opinion of probable construction cost 2
- Assemble and coordinate/review bidding and contract documents, using City format. 2
 - Use small-project City standard contract.
- Prepare drawings/specifications to describe the work. 10
- Design Review Meeting with Public Works Director, respond to comments, make revisions. 1
- Set up project at local plan room, for internet distribution, also advertise on City website. 2
- Meet with bidders and address questions during the advertisement period, prepare addenda. 2
- Review bids, check qualifications and experiece, and recommend award to City 1
- Respond to change requests, claims, prepare change orders as required. 1

Construction Phase:

- Construction administration and review of pay requests. 2
- Conduct Meetings with Contractor - Pre-Con, progress, final. 2
- Periodic visits to observe the work. (Part Time Inspection) 5

Excluded:

- Services of City Attorney for easement document preparation (Only if easements are needed, not expected.)
- Execution of Easements, recording. (by City Staff).

Estimated Consultant Fee:

Design Phase:	31 Hours x	\$ 75.00 / hour =	\$ 2,325.00
Construction Phase:	9 Hours x	\$ 75.00 / hour =	\$ 675.00
			<u>\$ 3,000.00</u>

Budget: Sewer Budget / CIP

Schedule:

Estimated Completion Date: 5/1/2017

Project Deadlines: n/a

Submitted By



Jay Norco, P.E. - President.

10/3/16

Date

Authorization:

Mayor

October 10, 2016
Date

CITY OF PARKVILLE Policy Report

Date: October 3, 2016

Prepared By:
Alysen Abel
Public Works Director

Reviewed By:
Lauren Palmer
City Administrator

ISSUE:

Approve a work authorization with North Hills Engineering (Jay Norco) for the design of the Riverchase sewer repair.

BACKGROUND:

The Riverchase subdivision is served by a pressure sewer system that runs along Riverchase Lane to Hwy 9, then along Hwy 9. The existing sanitary sewer main along Riverchase Lane has experienced multiple blockages and breaks over the years. The necessary repairs include replacement of approximately 860 feet of pressure sewer and installation of a new access pit at the intersection of Wall Street and Riverchase Lane. Additional features will be installed to assist staff with future monitoring of the sewer main. Attachment 1 includes a project map that shows the anticipated construction. Staff intends to budget this repair in the 2017 CIP. In order to expedite construction, staff recommends proceeding with design in 2016.

On August 5, 2014, the Board of Aldermen approved a five-year agreement with North Hills Engineering (NHE) for on-call contract engineering services. The agreement allows the City to execute individual work authorizations for supplemental engineering services for specific projects and studies.

This work authorization with North Hills Engineering in the amount of \$6,525 includes the engineering design, document preparation, bidding, and construction administration of the Riverchase sewer repairs. There will be a separate agenda item for the Board of Aldermen to consider for the construction contract once the engineering design and bid documents are completed.

BUDGET IMPACT:

This project was not included in the 2016 Capital Improvements Program (CIP). It is estimated that the Riverchase sewer repair project will cost \$46,585, including the engineering and project management fees. Staff anticipates that the design and bidding will occur in 2016, while the construction of the sewer repairs will occur in 2017. The 2017 CIP for the Sewer Fund will include the construction costs associated with the repairs in the estimated amount of \$40,000. The design cost of \$6,525 in 2016 is an unbudgeted expense, but capacity is available in other budgeted items to cover this expense. On September 20, 2016, the Board of Aldermen approved a construction agreement with Westland Construction for the 2016 Downtown Sewer Repairs in the amount of \$117,000. There was an overall cost savings of \$137,954.50.

ALTERNATIVES:

1. Approve the work authorization with North Hills Engineering in the amount of \$6,525.
2. Direct staff to negotiate changes to the work authorization.
3. Direct staff to postpone the project design to 2017 pending budget approval.
4. Do not approve the work authorization.
5. Postpone the item.

ITEM 4D

For 10-10-16

Board of Aldermen - Finance Committee Meeting

STAFF RECOMMENDATION:

Staff recommends approval of the work authorization with North Hills Engineering for the engineering-related work associated with the Riverchase sewer repair.

POLICY:

Per the Purchasing Policy, Resolution No. 10-02-14, the Finance Committee may authorize purchases up to \$10,000.

SUGGESTED MOTION:

I move to approve Work Authorization No. 67 with North Hills Engineering (Jay Norco) for the design and project management of the Riverchase sewer repair in the amount of \$6,525.

ATTACHMENTS:

1. Project Map
2. Project Cost Estimate
3. Work Authorization



1 inch = 60 feet

Extend locate wire into new valve pit, loop 4 feet of wire inside pit.

Construct new valve and cleanout pit in street, with iron ring and lid.

Connect to existing 2-1/2" PVC main using restrained coupling.

Install 2-1/2" x 2" PVC gradual reducer, minimum 4 feet uphill from service connection tee.

Extend pressure sewer lateral and connect to new tee on new pressure main. (4 such.)

Build new cleanout pit with wye's, valves, and risers with caps. Install Pressure gage on main downstream of cleanout wye's.

Existing 1-1/4" pressure sewer service line. (Typical). Locations are approximate.

New 2-inch PVC pressure main. Provide with locate wire taped to the pipe. About 860 LF.

Remove existing pressure gage pit. Re-use pit and lid for new pressure gage.

Provide pressure gage inside pit. Use existing pit and cover from nearby pit on existing pipe.

Abandon in place existing 2-1/2" PVC

RIVERCHASE DRIVE

Lay new 2" PVC, align for more direct route to connection.

Legend

- Exist Air/Valve Pit
- Exist C-O Pit
- Proposed-Pit
- Pressure-Lines
- Proposed Press Sewer
- PlatteParcels7April2016

Remove existing cleanout pit. Re-use PVC pit and iron lid for new cleanout pit.

Connect to existing 2" PVC with restrained coupling.

Extend locate wire into existing valve pit, loop 4 feet of wire inside pit.

City of Parkville
Riverchase Pressure Sewer
Preliminary Plan for Replacement 2016

CITY OF PARKVILLE
RIVERCHASE SUBDIVISION PRESSURE SEWER

JN
9/28/2016

Re: Estimate to replace the lower section of the Riverchase pressure main, from Wall St. down to the location of the old package plant.

COST ITEM:	QTY	UNIT	PRICE	EXTEN.
Mobilization:	1	LS	\$ 3,000.00	\$ 3,000
2" Certalok PVC, or SDR17 pvc gasketed	855	LF	\$ 3.10	\$ 2,651
2-1/2" SDR17 pvc gasketed	40	LF	\$ 2.00	\$ 80
Locate wire, including splice kits	530	LF	\$ 1.75	\$ 928
Connection couplings, restrained	3	EA	\$ 550.00	\$ 1,650
Trenching & backfill	870	LF	\$ 12.00	\$ 10,440
Build upper cleanout pit(re-use lower bbl)	1	LS	\$ 2,300.00	\$ 2,300
Build middle pressure gage pit	1	LS	\$ 1,800.00	\$ 1,800
Build concrete valve pit in Wall St, with cleanouts, valves.	1	LS	\$ 5,500.00	\$ 5,500
Asphalt sawcutting, concrete cap, asphalt surface patch	1	LS	\$ 2,700.00	\$ 2,700
Cap & abandon old pipe	1	LS	\$ 1,200.00	\$ 1,200
Sewage hauling (for upper and lower connections)	1	LS	\$ 2,500.00	\$ 2,500
Subtotal				\$ 31,748
Contractor's General Requirements:			15%	\$ 4,762.20
Construction Contingency:			10%	\$ 476.22
Total Estimated Construction:				\$ 36,986
Boundary Survey and Legal Descriptions				\$ 3,000
Engineering Design.				\$ 5,200
Observation, Construction Phase Admin.				\$ 1,400
				\$ 46,586

WORK PLANNING / AUTHORIZATION FORM

Number: WA-67

Project / Work Description:

Design and Project Management for Riverchase Pressure Sewer Replacement

Purpose: To design and administer construction of repairs/replacement of sanitary sewer system.

This WA covers the design, document preparation, bidding, and construction administration of the Riverchase Sewer replacement is needed because the existing section of pipe has had multiple blockages and breaks.

The ensuing construction project will replace about 860 feet of pressure sewer with modern materials.

The project will include a new access pit in the intersection of Wall Street and Riverchase Drive.

Engineering & Proj. Mgt. Budget \$6,600

Total Project Budget: \$47,000

Service Provider: North Hills Engineering, Inc.

Terms: Subject to the provisions of the August 5, 2014 Engineering Services Agreement between the City and North Hills Engineering Incorporated

Primary Tasks - Design Phase:

Project Management and Coordination Meetings with City Staff (3 month project.)	5
Visit the Sites of work to evaluate access, disturbance, easements required, etc.	2
Perform field measurements and survey shots to verify key dimensions.	2
Survey Coordination -using 3rd Party surveying consultant.	3
Finalize work package and extent of work, need for alternate bid options.	4
Prepare preliminary opinion of probable construction cost	2
Assemble and coordinate/review bidding and contract documents, using City format.	4
Use large-project City standard contract.	
Prepare drawings to describe the work. Use surveyors line work, show access.	30
Prepare extents of easements or access agreements recommended.	2
(Prepate polygons for 3rd party RLS to perform. Likely two parcels.)	
Design Review Meeting with Public Works Director, respond to comments, make revisions.	1
Meet with public to obtain signed access agreements and easements.	4
Set up project at local plan room, for internet distribution, also advertise on City website.	2
Meet with bidders and address questions during the advertisement period, prepare addenda.	4
Review bids, check qualifications and experiece, and recommend award to City	2
Respond too change requests, claims, prepare change orders as required.	2

Construction Phase:

Construction administration and review of pay requests.	4
Conduct Meetings with Contractor - Pre-Con, progress, final.	8
Periodic visits to observe the work. (Part Time Inspection)	6

Excluded:

Services of City Attorney for easement document preparation (Only if easements are needed, not expected.)
Execution of Easements, recording. (by City Staff).

Estimated Consultant Fee:

Design Phase:	69 Hours x	\$ 75.00 / hour =	\$ 5,175.00
Construction Phase:	18 Hours x	\$ 75.00 / hour =	\$ 1,350.00
			\$ 6,525.00

Budget: Sewer Budget / CIP

Schedule:

Estimated Completion Date: 3/1/2017

Project Deadlines: n/a

Submitted By:

Jay Norco, P.E. - President.

Date

10/3/16

Authorization:

Mayor

Date

October 10, 2016