



SHAKOPEE PUBLIC UTILITIES COMMISSION

“Lighting the Way - Yesterday, Today and Beyond”

Preliminary Engineering Report

Overhead Electric Facilities - Shakopee Avenue Neighborhood East of Marschall Road

Executive Summary

It is proposed to underground the overhead distribution facilities on the north side of Shakopee Avenue that were constructed in the 1970s along an abandoned railroad right of way and is no longer accessible and maintainable by Shakopee Public Utilities in an efficient manner. There is an option to rebuild the line and clear out the area in order to regain access to the line, but since it is located in the backyards of the properties along Shakopee Avenue it would be beneficial to both the property owners and SPU to move the line and underground it in the front yards.

Due to the mutual benefit to SPU and the property owners, SPU must have the support and involvement of all of the property owners along Shakopee Avenue. It is proposed, per past practice, to require each customer to pay the 2017 Underground Charge per lot of \$606 which will account for approximately 22% of the total project cost. SPU would pick up the remainder, \$83,566, under budgeted capital improvement projects. SPU would also require any property owner with an overhead service to hire an electrician to convert their service to underground costing them an estimated additional \$2,000. Some property owners may also be required to provide an easement in order to tie the new front yard facilities to any back yard pedestals.

SPU would construct the new underground system in conjunction with the City of Shakopee's 2017 Street Recon Project, which will be replacing Shakopee Avenue and the associated sewers and water main in the street. By proceeding with this project during the 2017 Street Recon, there is expected to be some cost savings in restoration due to driveways being disturbed. SPU will also combine this project with another project to bring more capacity to the Heritage Place neighborhood, resulting in additional savings by utilizing the same trench for both projects.

Background

A three phase overhead electric line is presently running from Marschall Road east, on the north side of the properties along the north side of Shakopee Avenue to 11th Avenue. This line was originally constructed as a main line feeder in the early 1970s to serve the neighborhood of this portion of Shakopee Avenue and to provide capacity to serve new development in south east Shakopee. The line was constructed in a combination of street right of way, alley right of way and property drainage and utility easements. It was also constructed adjacent to a former railroad right of way which provided access for SPU service vehicles and tree clearance for the line.

As development occurred adjacent to the line, service was tapped off of this line with overhead transformers and a combination of overhead and underground secondary services.

Approximately two thirds of the services directly off of the line are underground while the remaining one third is overhead. Per SPU policies, when a customer has an underground service,

the customer owns the service cable from the house to the pole, pedestal or transformer near their property line. When a customer is served from an overhead service drop, SPU owns the wires up to the connection at the mast on the house.

The surrounding neighborhood has also been served from this line as development occurred by extending either overhead or underground primary taps off of this line. This includes an underground cable that serves a portion of the Heritage Place neighborhood and is a backup to the rest of that neighborhood via the underground system all the way to Vierling Drive and Marschall Road. Presently, approximately 475 customers are served either directly or backed up by this line.

A portion of the line was reconstructed in 1999 as part of a relocation project for the White Pines apartment complex. The line originally cut directly across what is now the White Pines apartment property along the former Ramsey Street alignment, but was relocated to accommodate the apartment complex development. The line was rebuilt and relocated up to 1501 and 1511 Shakopee Avenue East.

The City of Shakopee has approved a street reconstruction project for Shakopee Avenue east of Marschall to replace the street and utilities. This project will be completed in the summer construction season of 2017. The street reconstruction project does not affect the overhead line north of Shakopee Avenue, but as part of the project the boulevard and driveways are expected to be disturbed creating an opportunity for reduced costs for a project to bury electric in the boulevard of Shakopee Avenue.

Existing Conditions

Since the line was built in the 1970s, access and tree maintenance has been more difficult for SPU crews. Development on the north side of the line has vacated the former railroad right of way, which provided significant access to maintain the line. SPU crews used to drive the railroad right of way to perform their maintenance and outage response. As a result of the vacation, the line has become a strictly backyard line with mature trees, fences and sheds or other structures that create a hindrance to the successful prevention and response of outages along the line.

There are as many as 2-3 outages a year along this line due to tree branches or animals on the line. Every outage affects around 300 customers and lasts up to a few of hours as the crews responding must walk the line to spot the outage due to the lack of truck access. In order to prevent some of the outages, tree trimming is performed annually, but cannot prevent all outages. Average annual cost of the tree trimming just for this area is \$4,000 - \$5,000.

The line is nearing the end of its expected life. Typical useful life of an overhead electric line with wood poles is 60 years. The life to date of this line is around 45 years. Periodically, visual inspections are completed as crews perform regular tree trimming. The most recent inspection indicated that the poles are in good condition, but limited access will prevent any spot pole replacements. We can typically extend the life of a line with spot replacements of poles, transformers and other materials but, due to the limited access, this will be difficult or impossible to do. As a result, we will need to plan to rebuild the line prior to the end of the useful life which is in the next 10 to 15 years.

Comcast is also attached to the line for the entire length of the three phase overhead line north of Shakopee Avenue.

Options to Proceed

There are two main options at this time to mitigate the existing issues for the three phase overhead electric line.

1. Rebuild the Overhead Line in Place + Establish Access and Clearance

By rebuilding the overhead line in place, we will gain the additional life of a new line. In order to rebuild the line and properly maintain it, SPU needs access to drive a digger derrick truck alongside the line. We will therefore need to establish a clear path by working with the homeowners by having fences and structures removed. We will also need to do some minor grading in order to regain access to the old railroad path. Additionally, nearby mature trees will need to be removed in order to prevent them from falling on the line. In all, by gaining truck access to the line, SPU crews will be able to perform basic maintenance and outage response more effectively and prolong the life of the existing line.

2. Relocate the Line Underground (proposed option)

An underground system would be installed in the front yards where the transformers and pedestals would be accessible. Homeowners with overhead service lines would be required to underground their service to the front yard where they would connect to either a transformer or pedestal. SPU would either splice on and extend the underground services for customers with an underground service to the front (preferred) or install secondary along the side lot line to a pedestal in the backyard. Easements would have to be granted if SPU extends the secondary to the backyard pedestal. The overhead line would then be removed.

By burying the line, outages will be reduced by removing the possibility of trees and most animals from causing an outage.

Additional Capacity Needs

In the summer of 2016, an outage occurred due to excessive loads in the Heritage Place neighborhood. The outage has revealed a need to increase the capacity and correct some fusing issues for the Heritage Place neighborhood. The fusing issues are directly related to the existing overhead circuit reclosers on the overhead line north of Shakopee Avenue which are designed to reduce outages by clearing a temporary fault on the line such as a branch falling on and then off of the line. A project has been planned and budgeted to correct this. The project will partly involve burying a single phase line down Shakopee Avenue in order to bypass the overhead line north of Shakopee Avenue. This will be done in conjunction with the Shakopee Avenue Reconstruction Project.

The total estimated cost to install this single phase line down Shakopee Avenue and to add capacity for the Heritage Place neighborhood is \$47,000.

Proposed Improvements & Estimated Costs

In conjunction with the planned project to bury a single phase cable for the Heritage Place neighborhood, burying an additional 3 cables will enable SPU to remove the need for the

overhead electric line in the backyards north of Shakopee Avenue. A three phase line is proposed to be installed in the boulevard of Shakopee Avenue with an adjacent single phase line with padmount transformers and pedestals in the front yards to serve the Shakopee Avenue customers.

When a public improvement such as a reconstruction project requires more than 300ft of overhead electric to be relocated, the Shakopee City Council has the option to order the overhead line to be relocated underground, but the Shakopee Avenue reconstruction project does not require this line to be relocated. Thus, the project must be a voluntary undergrounding by SPU.

A couple of past projects have set precedent for burying an existing overhead line without the City of Shakopee's (or other right of way authority) direction. One of those past projects is the Beach Street Undergrounding in Prior Lake. In that project, the property owners asked for the line to be placed underground and we established an agreement with the customers affected that required them to bury their own service cable if it was overhead, assume ownership of the service cable up to a point of connection at their property line (either a pedestal or transformer) and pay an underground fee equal to the underground charge at that time which was established for new developments. More recently, the Hilldale Avenue neighborhood had a similar project completed.

It is proposed to follow a similar approach to Beach Street and Hilldale Avenue. An agreement with each property owner would be obtained that will require them to bury their own service cable if it was overhead, assume ownership of the service cable up to a point of connection at their property line (either a pedestal or transformer) and pay an underground fee equal to 2017 Underground Charge which is \$606 per lot. This will require the voluntary involvement of each property owner so a survey has been developed to gauge the neighborhood's support to remove the overhead electric line. The survey results are being compiled, but have thus far shown an overall support from the property owners to underground the line.

The property owners with an overhead service line will be burdened with the additional expense to hire an electrician to convert and bury their service. To help alleviate and encourage this process, SPU has in the past donated the service cable necessary to bury the line. It is proposed to do this again and is approximately a \$400 value. Without the cable cost, it is estimated that the additional cost to bury a service will be approximately \$2,000.

The property owners with an underground service will either have their service cable connected at the backyard pedestal or SPU will splice on and extend the cable to the front yard. If SPU extends the services to the front yard, the property owner will be agreeing to own the service cable all the way up to the pedestal or transformer at the front yard property corner.

Comcast has also indicated that they would participate by undergrounding their facilities as an upgrade to their services in the area. This is important as it allows all of the backyard poles to be removed if the electric is removed. The Comcast response is also attached to this report.

The estimated cost to underground the overhead line is \$94,000 and the cost to remove the poles in the backyards is \$13,200 for a total of \$107,200.

When combined with the single phase underground project for Heritage Place, the cost for that project will be reduced by \$10,000 for a total additional cost of \$37,000.

Funding Sources

Shakopee Public Utilities has budgeted funds in the 2017 Capital Improvements Plan in categories for similar projects as a system upgrade and rebuild overhead lines as follows.

System Material & Facilities; Lateral Circuit Reconfiguration	\$100,000
Rebuild OH Lines; DL-43 Abandoned RR ROW N of Shakopee Ave from CSAH 17 to 11 th Ave 0.75 miles;	\$10,000

Additionally, each property owner will be expected to pay the underground fee of \$606 as a contribution to the project.

Underground Fees (\$606 per lot – 39 lots)	\$23,634
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Total from funding sources is \$134,634. Total combined project cost is \$144,200. The remaining funding gap of \$10,434 can be funded from the miscellaneous project budget for system projects which has a budget of \$170,000 in 2017 of which is budgeted to improve system reliability for RP3 considerations.

The relocation fund is not an eligible funding source for this project since the Shakopee City Council cannot order the line to be undergrounded per established policy and ordinance.

Conclusion

From an engineering standpoint, the proposed project is feasible and an efficient use of budgeted funds to provide a reliability improvement to 475 customers in the Shakopee Ave, 11th Ave, Heritage Place Additions and Vierling drive neighborhoods.

Attachments

Aerial map of existing electric facilities

Agreement to Underground between SPU and property owners

Project introductory letter to property owners and survey

Comcast correspondence in agreement to underground their facilities

Report Preparation

This report was prepared by me and I am a duly licensed Professional Engineer under the laws the State of Minnesota.

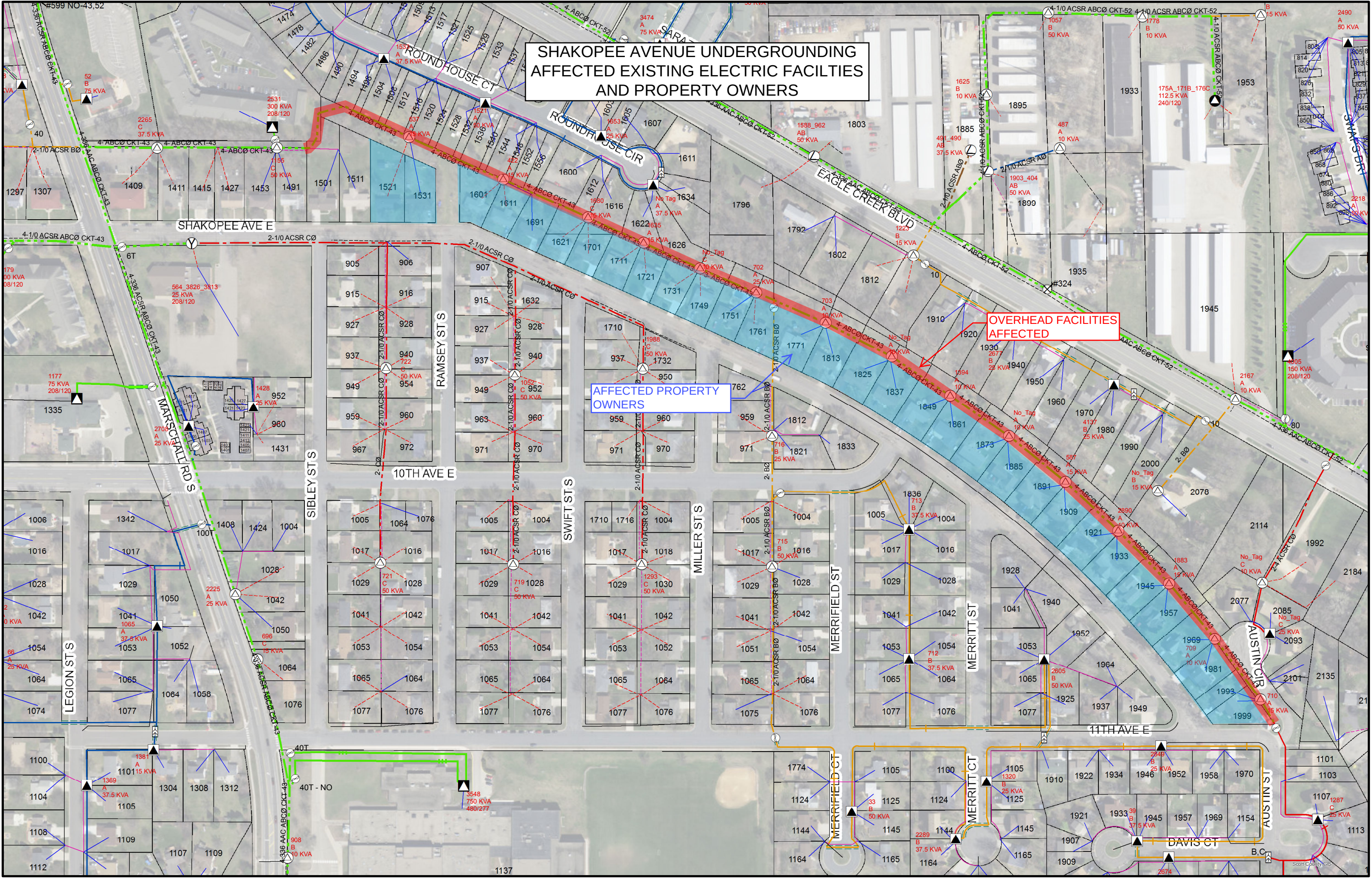
Christian Fenstermacher

Date February 27, 2017 License No. 53077

SHAKOPEE AVENUE UNDERGROUNDING
AFFECTED EXISTING ELECTRIC FACILITIES
AND PROPERTY OWNERS

OVERHEAD FACILITIES
AFFECTED

AFFECTED PROPERTY
OWNERS



PRELIMINARY-ASSESSMENT ROLL
(SPUC) Shakopee Avenue Electric Undergrounding Project 2017-9

<i>PID</i>	<i>PROPERTY OWNER</i>	<i>PROPERTY ADDRESS</i>	<i>LEGAL DESCRIPTION</i>	<i>RESIDENTIAL UNIT</i>	<i>STREET ASSESSMENT</i>
270310190	ANDERSON DARIN PO BOX 249 CHANHASSEN, MN 55317	1691 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 2ND ADDN Lot 001 Block 004 SubdivisionCd 27031	1	\$ 606.00
270310210	LEE JANE M 1701 SHAKOPEE AVE E SHAKOPEE, MN 55379	1701 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 2ND ADDN Lot 002 Block 004 SubdivisionCd 27031	1	\$ 606.00
270310230	ROEPKE CAMERON B 1721 SHAKOPEE AVE E SHAKOPEE, MN 55379	1721 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 2ND ADDN Lot 004 Block 004 SubdivisionCd 27031	1	\$ 606.00
270310240	LARSEN DONALD L & ALICE D 1731 SHAKOPEE AVE E SHAKOPEE, MN 55379	1731 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 2ND ADDN Lot 005 Block 004 SubdivisionCd 27031	1	\$ 606.00
270310250	KELLY JAY T & JUDY C 1749 SHAKOPEE AVE E SHAKOPEE, MN 55379	1749 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 2ND ADDN Lot 006 Block 004 SubdivisionCd 27031	1	\$ 606.00
270310260	SALISBURY MARSHALL 1751 SHAKOPEE AVE E SHAKOPEE, MN 55379	1751 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 2ND ADDN Lot 007 Block 004 SubdivisionCd 27031	1	\$ 606.00
270390030	THOMPSON LEANN CHRISTINE 1521 SHAKOPEE AVE E SHAKOPEE, MN 55379	1521 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 4TH ADDN Lot 003 Block 001 SubdivisionCd 27039	1	\$ 606.00
270390040	HOEN ARLEN & BRENDA 1531 SHAKOPEE AVE E SHAKOPEE, MN 55379	1531 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 4TH ADDN Lot 004 Block 001 SubdivisionCd 27039	1	\$ 606.00
270390050	NELSON ALEXANDER 1601 SHAKOPEE AVE E SHAKOPEE, MN 55379	1601 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 4TH ADDN Lot 001 Block 002 SubdivisionCd 27039	1	\$ 606.00
270520370	LEMKE JAMES P & ANGELA J 1771 SHAKOPEE AVE E SHAKOPEE, MN 55379	1771 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 001 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520380	WILKIE BRIDGET 1813 SHAKOPEE AVE E SHAKOPEE, MN 55379	1813 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 002 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520390	WELCH KEVIN C & CONNIE A 1825 SHAKOPEE AVE E SHAKOPEE, MN 55379	1825 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 003 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520400	MEYER JACOB Z 1837 SHAKOPEE AVE E SHAKOPEE, MN 55379	1837 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 004 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520410	TOUTGES ROBERTA 1849 SHAKOPEE AVE E SHAKOPEE, MN 55379	1849 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 005 Block 005 SubdivisionCd 27052	1	\$ 606.00

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270520420	GULLEY BLANCHE E 1861 SHAKOPEE AVE E SHAKOPEE, MN 55379	1861 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 006 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520430	ZONDLO ROBERT A & PHYLLIS M 1873 SHAKOPEE AVE E SHAKOPEE, MN 55379	1873 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 007 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520440	DUVERNAY PATRICK 1885 SHAKOPEE AVE E SHAKOPEE, MN 55379	1885 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 008 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520450	GREENTREE DEVELOPMENT CORP 323 NAUMKEAG ST S SHAKOPEE, MN 55379	1891 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 009 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520460	WROBLESKI DAVID J 1909 SHAKOPEE AVE E SHAKOPEE, MN 55379	1909 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 010 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520470	HANEL MICHAEL & LINDA MARIE 1921 SHAKOPEE AVE E SHAKOPEE, MN 55379	1921 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 011 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520480	LLOYD WILLIAM D & KAREN A 1939 SHAKOPEE AVE E SHAKOPEE, MN 55379	1939 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 012 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520490	HENNING THOMAS V & ELAINE 1945 SHAKOPEE AVE E SHAKOPEE, MN 55379	1945 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 013 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520500	ROLLINS STEVEN A 1957 SHAKOPEE AVE E SHAKOPEE, MN 55379	1957 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 014 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520510	PERSON JONATHON M 1969 SHAKOPEE AVE E SHAKOPEE, MN 55379	1969 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 015 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520520	STARLING JOHN T 1981 SHAKOPEE AVE E SHAKOPEE, MN 55379	1981 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 016 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520530	NIELSEN THOMAS D 1999 SHAKOPEE AVE E SHAKOPEE, MN 55379	1999 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 017 Block 005 SubdivisionCd 27052	1	\$ 606.00
270520531	KARR WILLIAM J & BARBARA A 1993 SHAKOPEE AVE E SHAKOPEE, MN 55379	1993 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName JEJ ADDN Lot 017 Block 005 SubdivisionCd 27052	1	\$ 606.00
278010070	DIANNE L LENZMEIER TRUST 1761 SHAKOPEE AVE E SHAKOPEE, MN 55379	1761 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SAMANTHA WOODS Lot O-L Block 00A SubdivisionCd 27223	1	\$ 606.00

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278010080	WOLFE LOREN D & MARY E 1611 SHAKOPEE AVE E SHAKOPEE, MN 55379	1611 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 4TH ADDN Lot 002 Block 002 SubdivisionCd 27039	1	\$ 606.00
278010090	ANDERSON RICHARD G & SHELLEY A 1621 SHAKOPEE AVE E SHAKOPEE, MN 55379	1621 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 2ND ADDN Lot 001 Block 004 SubdivisionCd 27031	1	\$ 606.00
278010150	SIEBENALER THOMAS E & LINDA E 1711 SHAKOPEE AVE E SHAKOPEE, MN 55379	1711 SHAKOPEE AVE E SHAKOPEE MN 55379	SubdivisionName SCENIC HEIGHTS 4TH ADDN Lot O-L Block 00D SubdivisionCd 27039	1	\$ 606.00