



Snow & Ice Removal Plan



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I. Purpose, Policy, Considerations, Level of Service

Purpose

The Purpose of the Snow and Ice Policy and Procedure plan is to communicate the process and level of service for snow removal and ice control for the Town of Berthoud. The Town's streets are divided into arterials, collectors, school routes, Fire Department and ambulance streets. These streets receive de-icing and plowing priorities. This assures each residential area is in close proximity to a plowed street and that emergency services can be provided. Winter storms can be trying for all of us, motorists, residents and snowplow operators alike. The goal of the Streets Department and Parks Department maintenance is to remove snow and ice from our roadways and sidewalks as rapidly and efficiently as possible while keeping roads open and essential traffic moving. This does not mean bare, dry pavement should be expected after a snowstorm. The aim of snow and ice control operations is to return road surfaces to safe winter driving conditions as soon as feasible within the limitations of this policy, our limited resources and weather conditions. With proper use of storm forecasts, personnel, equipment, and deicing materials, the desired result can usually be attained. However, flexibility is needed to adapt to the variety of circumstances and conditions during a snow or ice storm.

The Snow and Ice Removal Plan also incorporates standard operating procedures (SOP's) to aid in efforts to preserve air and water quality in our community. The following policies and procedures serve as a practical guide for effective snow and ice control procedures in the Town of Berthoud.

Plan Considerations

In developing the policies for how to best undertake winter maintenance activities the Town considers a number of factors including, but not limited to the following:

- Public safety;
- The amount of funds available for these operations;
- The number and availability of personnel for these operations;
- The desire to maintain a safe and efficient transportation system;
- The ability to deliver emergency services;
- Environmental impacts;
- Weather conditions including temperature and snowfall amounts;
- Protection of Town property and personal property; and
- Effectively allocating resources;

Policy Statement

The snow and ice control objectives of the Town are to:

- Provide safe travel conditions for pedestrians and motorists;
- Provide cost effective snow and ice control services;
- Reduce economic losses to the municipality and to businesses that can result from workers being unable to get to their jobs;

- Assist Police, Fire and Emergency Medical Services in fulfilling their duties, and;
- Provide safe, passable roads and school bus routes.

The Town of Berthoud has a commitment to provide effective and efficient winter maintenance to its citizens. However, it must be noted that the following circumstances may prevent or delay complete implementation of this Plan:

- Equipment breakdown;
- Vehicles disabled in deep snow and weather so severe as to cause crews to be called in from their duties for their safety;
- Equipment rendered inadequate by the depths of the snow or drifts;
- Crew breaks, and breaks required for re-fueling and refilling deicing materials;
- Mechanical failures and needed repair;
- Parked or stalled private vehicles that restrict or prevent safe roadway movement and plowing; and
- Unforeseen emergencies.

Scope of Responsibility

- The Town of Berthoud Streets Department is responsible for snow and ice control on municipal streets within the city limits;
- The freeway segments and portions of state routes within the city limits are handled by the Colorado Department of Transportation (CDOT);
- The Town does not remove snow and ice from private streets, parking lots or driveways;
- The Town is not responsible for snow and ice control on sidewalks except those immediately abutting or within municipal facilities or properties; and
- Town parking lots, sidewalks and paved trails are handled by the Parks & Recreation Department.

Level of Service

It is the expectation of our citizens that we will keep all city streets sufficiently passable during and following a winter weather incident. To accomplish this, the Town will provide, to the extent reasonably possible, effective and efficient measures consistent with generally accepted standard practices to restore mobility. Due to the many variables associated with winter weather, each event is unique. Factors that influence when and what measures we use include: air and pavement temperatures, wind speeds and directions, precipitation rates and types, time of onset, storm event duration and traffic activity. Availability of equipment, personnel and materials are also key factors that impact the effectiveness of snow and ice control efforts.

Snow and ice control measures are directed to achieving and maintaining relatively safe traffic movement on public streets within a reasonable time period. Therefore, efforts are first concentrated on the main arterials, collectors, school routes and ambulance streets that carry most of the traffic. Residential and other low-volume streets are included when resources are available. Due to the demographics and design, cul-de-sacs will not be cleared of snow or ice.

The optimal level of service is reached when the major thoroughfare streets are down to “bare pavement” clear of snow and ice from curb-to-curb. Reaching that objective takes time which is affected by the variables of meteorological conditions, traffic activity and type and amount of materials applied. The width of certain streets and number of turn lanes are also factors.

The minimum level of service for thoroughfares is to clear the through lanes and left-turn lanes at intersections. Exclusive right-turn lanes and joint center turn lanes may be left unplowed during main operations.

Resident/Business Owner Responsibilities

Clear snow from sidewalks as soon as possible, but not later than 24 hours after snow has ceased to fall.

This is to prevent the snow from turning into an icy hazard for pedestrians, or forcing them to walk in the street. ***Berthoud Municipal Code (Chapter 12.16, Sec. 12.16.050) requires property owners to shovel their sidewalks no later than 24 hours after the end of the snow event.***

DO NOT place snow removed from residential driveways or sidewalks onto the street.

Aim snow blowers into front yards away from sidewalks, the park strip and the street. Ice and rocks, as well as powder snow are blown out many feet. This material can hit parked or passing cars, which can cause damage to those vehicles as well as possible accidents. Also, snow blown onto the street will freeze and become slick, which may easily cause accidents. Place snow, shoveled into your driveways by snow plows, onto the area between your sidewalk and curb if available, the park strip, but, not into the street or gutter. Otherwise, if this pile of snow is shoveled back into the street, it will freeze and become hidden by new snow. Then when snowplows or other vehicles hit that pile of ice, they can be shoveled back into the traffic lanes and can easily hit passing or parked cars. Also, placing this snow into the gutter will slow down or block drainage. Sidewalk snow removal should be deposited in your yard area, not on the street.

Remove snow from around fire hydrants near your home.

Clear snow from around mailboxes

Sometimes snowplow crews cannot get snow plowed all the way to the curb or crews block the mailbox. Clearing the snow from your mailbox will help keep mail delivery vehicles from blocking traffic and help prevent accidents.

II. Implementation

The policies and procedures outlined herein will be in effect when weather conditions could cause accumulations of frost, sleet, ice or snow on our maintained roadways, school streets or municipal lots and will be in effect during the normal winter season. The Town of Berthoud Streets Department begins preparing for winter as early as August. All snow equipment is serviced, mounted and checked to see that it is in good working order. Anti-icing materials are stockpiled so that enough is on hand for a number of storms.

Monitoring Snow/Ice Events Snow Emergency

During normal working hours, (7:00am to 3:30pm., Monday thru Friday) the observations of the Streets, Parks Departments and Police will alert the first response for snow and ice removal. After normal working hours, police officers will make observations and recommendations to the Streets Department Emergency On-Call personnel regarding street conditions. The Operations and Parks supervisors will be notified of any snow removal issues or traffic emergencies and make adjustments to snow removal operations as needed.

When Operations Begin

Berthoud snow removal operational hours are typically 4:00am to 6:00pm. Downtown sidewalks are recommended to be cleared by the business owner prior to 6:00am. The Supervisors will decide when to begin snow/ice control operations. Town Administration along with the Parks Department Supervisors will also decide when to start snow/ice removal on city sidewalks, paved trails and parking lots. The criterion for that decision is:

- Snow accumulation, or expected accumulation of 2 or more inches;
- Icy conditions which affect travel; and
- Time of snowfall in relationship to traffic volumes.

Snow and ice control operations are expensive and involve the use of limited personnel and equipment. During snow events, snow removal becomes a priority for collectors, arterials, school routes, fire department and ambulance streets and they are cleared. The use of weather reports from the National Weather Service, review of live local television satellite storm tracking and commercial radio will be used concurrently with existing street condition reports to determine the appropriate storm response.

How Snow is Removed

Arterials-Snow will be plowed in a manner so as to minimize traffic obstructions. The center of the roadway will be plowed first. The snow is pushed from left to right. The discharge shall go onto the shoulder area of the street. In times of extreme snowfall and ice, streets will not always be able to be completely cleared. Plowing will normally begin when one or more inches of snow accumulate. In extreme conditions plowing of snow procedures are apt to change dependant on the conditions.

The primary routes will always have priority when engaged in plowing. Hills on main arterials have top priority. Once the primary routes are open, the secondary and residential routes may be plowed. Operators will plow whenever possible to make right turns, this helps keep the intersections from developing a berm for cross traffic to go over. Operators are trained while on multi-lane roads, to plow the inside lane first and plow snow to the outside whenever possible. It is common practice to plow the turn lanes on the first pass and avoid burying fire hydrants with snow spoils. Operators plow slush at speeds not to cause damage or injury to property or people by the spoils coming off the blade to the extent possible.

Employees assigned to snow removal shall be responsible for the completion of their assigned route and appropriate snow removal based on weather or roadway conditions. Each operator assigned to a specified route shall be responsible for monitoring its condition and shall maintain

communication with the assigned supervisor to report on their progress and the effectiveness of the deicing and plowing efforts.

Supervisors will be responsible for directing and coordinating work crews to complete snow and ice removal in accordance with established priority ratings.

Personnel Responsibility

The snow and ice control plan used by the Town of Berthoud has been developed to establish a chain of command through which winter maintenance policies can be transformed into an effective and uniform set of actions. The actions taken by snow crews are the result of the general policies established by the administration, and procedures set forth in this plan, as approved by the Town Administrator.

Operators:

The snowplow operators are key to the success of the Snow and Ice Removal Plan. These operators are responsible for:

- Maintaining a positive work environment to enhance the teamwork concept;
- Providing a timely, effective service for their designated routes;
- Maintaining vehicles, plows and sanders in safe working order; and
- Serving as good-will ambassadors for the Town.

Supervisors:

Crew supervisors are responsible for:

- Maintaining a positive work environment to enhance the teamwork concept;
- Coordinating of service to ensure timely effective coverage;
- Coordinating vehicle, plow and sander maintenance and repair to ensure safe operations and adequate coverage;
- Maintaining deicing inventories and other vital supplies;
- Timely, courteous response to service complaints, requests and inquiries; and
- Providing training opportunities for snowplow operators.

Management:

Management is responsible for:

- Maintaining a positive work environment to enhance the teamwork concept;
- Providing adequate resources to ensure timely, effective service; and
- Creating training and feedback avenues for supervisors and operators; and utilizing various forums to create and maintain public awareness and support for snow removal activities.

III. Vehicle and Equipment Preparation

All vehicles and equipment utilized in the Snow and Ice Control Removal Plan are inspected for readiness and repairs in advance and as needed during the snow season by each Departments staff to ensure efficient operations for snow removal service.

Primary Snow Response Equipment

Vehicles and equipment Public Works Operations uses for snow and ice control:

Street Department

1	Tandem axle dump truck with v-box sander and 12' plow
2	Single axle dump truck with v-box sander and 11' plow
3	Cat loader with general purpose bucket or 10' plow
4	Dodge 1 ton with 9' plow
5	Skid loader with general purpose bucket or 7' snow blower
6	Chevy 1 ton with v-box sander and 9'plow

Parks and recreation Department

1	Toolcat Bobcat 4x4 Utility vehicle all wheel steer- 5' bucket or 6' blade
2	Kawasaki Mule 4x4, 6 foot manual side to side turn snow blade
3	John Deere 950 tractor (small size) - 5'bucket, 6' removal broom
4	Backpack blowers
5	Small walk behind snow thrower
6	Multiple hand held brooms and shovels
*	All new parks trucks are set-up for plows with just no truck plows purchased yet

IV. Priorities

During snow/ice conditions, calls from the Police, ambulance and Fire Departments regarding accidents, medical or other emergency situations are given top priority. Upon request from the appropriate agency, the Streets Department will provide assistance as necessary. Because of the high priority assigned to snow and ice control, almost all other street operations become secondary to snow removal activities. Streets will be plowed and have anti-icing materials applied according to established priorities. Priorities are set based upon traffic volume, public safety, and access to emergency facilities and schools. During major storms, crews will apply anti-icing materials (where required) prior to high volume traffic hours. Depending upon the type and intensity of the storm, plowing operations may be suspended during peak traffic hours to devote maximum effort to deicing operations to provide better traction. All streets in Berthoud are prioritized into groups for conducting snow removal operations, and snow plowing routes are also color coded for easy identification. Occasionally, multi-lane roads may require tandem plowing; this is a judgment call as conditions warrant. The following summarizes the snow removal priorities:

Priority 1 – Major Arterials – RED

These roadways are the major arterial streets and have four or more travel lanes. These streets are given first priority since they provide the interconnecting link from all corners of the Town. Also included are streets that provide access for emergency services such as fire stations, Ambulances and the Police Department. School Zones in the town are also considered Priority 1 during normal opening hours. Priority 1 streets will be maintained for all snow events.

Priority 2- Primary Collectors – Blue

These roadways are minor arterial and major collector streets and are generally streets that connect major arterial streets to residential streets. Also included are streets that provide access to major office areas and business areas such as grocery stores and service stations. Priority 2 streets will be maintained for all snow events

Special Priority: Certain streets that do not meet the classification of Priority 1 or 2 streets have been identified for snow and ice control operations at specific locations. The locations for streets in this category are limited to chronic icing problems at hills, curves or intersections that are likely to cause traffic accidents. These streets will be maintained after completion of the Priority 1 and 2 streets.

Priority 3- Residential Thru Streets/Loop Roads – Green

Selected local streets within residential and commercial areas will be plowed on a limited basis after priority one and two streets are passable. The first local streets to be plowed will be primary streets and loop streets through subdivisions. This plan allows all residences to be in close proximity of a plowed street in the shortest amount of time. The Town will address the remaining residential streets as time permits and weather conditions warrant.

Non-Priority – Residential Streets

Non-priority residential streets do not receive regular winter maintenance. Snow removal service is provided on residential streets only during the most extreme weather conditions as approved by the Public Works Director.

Refer to Appendix A for Public Works Operations Snow Removal Priority Map.

U.S. Highway 56 and Highway 287 are maintained by the *Colorado Department of Transportation* (CDOT). The Streets Department maintains snow removal on Mountain Avenue (SH 56) from the Roundabout to Meadowlark Avenue.

Travel Restrictions and Street Closures

During certain winter storm events it may become necessary to close streets or portions of streets to traffic. The Police Department may restrict the type of vehicles that may be operated on town streets during severe weather conditions and may order that certain streets be closed. Every effort will be made to alert the public of any restrictions and/or closures through the news media, community contacts, and posted on the town's web site; this action will only be taken if extreme weather conditions deem an area of the town unsafe for transit.

Note: To help our crews perform in a safe and efficient manner, vehicles abandoned during severe weather may be towed.

PRIORITY 1 Major Arterials & Primary Collectors

1 st Street from Town limits to Town limits
2 nd Street from Mountain Avenue to Bunyan Avenue
4 th Street From Mountain Avenue to LCR 10E
5 th Street From Mountain Avenue to Spartan Avenue
CR 17 from CR 4E to CR 14
CR 14 from CR 17 to CR 21
WCR 7 from Hwy 56 to Serenity Ridge Parkway
Mountain Avenue from 1 st Street to Meadowlark Drive
Spartan Avenue from 5 th Street to CR 17
Massachusetts Avenue from 3 rd Street to 9 th Street
Franklin Avenue from 3 rd Street to 9 th Street
Bunyan Avenue from 1 st Street to CR 17
CR 10E from 1 st Street to CR 17

PRIORITY 2 Secondary Collectors & Priority Residential

Weld CR 44 from I-25 to WCR 11
Weld CR 11 from Weld CR 44 to Weld CR 42
Weld CR 42 from Weld CR 11 to Weld CR 13
9 th Street from Spartan Avenue to Kansas Avenue
Longview Avenue from Spartan Avenue to Kansas Avenue
10 th Street from Spartan Avenue to Mountain Avenue
8 th Street from Spartan Avenue to Mountain Avenue
Welch Avenue from 1 st Street to CR 17
3 rd Street from Welch Avenue to Bunyan Avenue
Lake Avenue from 7 th Street to west of 10 th Street
7 th Street from Mountain Avenue to Bunyan Avenue
Longs Peak Avenue from 4 th Street to Cedar Avenue
Cedar Avenue from Longs Peak Avenue to 4 th Street
Berthoud Peak Drive (the entire loop) from CR 19 to CR 19
Meadowlark Drive from Mountain Avenue to Exeter Street
Gateway Park Boulevard From Mountain Avenue to Hollyberry Street
Serenity Ridge from CR 7 to Timeless Trail
Charles Drive from Serenity Ridge to Megan Way
Megan Way from Charles Drive to Serenity Ridge Parkway

PRIORITY 3 Residential Loop Roads

All remaining residential streets when snow depths and conditions warrant it.

V. Snow and Ice Control Operations

Winter Storm Categories

Winter storms that occur in our area may be categorized into four basic types. The response to Storms will be different for each category. The following discussion presents information concerning these categories, the service levels maintained and the materials used for each type of storm.

Category I Predicted Snow Fall Amount: Trace – 2”

Service Level: Maintain primary (red priority) and secondary (blue priority) routes during storm as needed. Lower priority snow routes usually do not require service.

Materials: Solid de-icer (Ice Slicer) as needed.

Road treatment primarily consists of applying Ice Slicer if necessary prior to the onset of the storm. Typically these storms move out of Berthoud within 24 hours and one application of Ice Slicer is sufficient to maintain the desired service level.

Category II Predicted Snow Fall Amount: 2”-6”

Service Level: Maintain primary (red priority) and secondary (blue priority) routes during the Storm. Loop roads during this category will receive removal service.

Materials: Ice Slicer as needed.

Heavy equipment is not required for storms at this level. Road treatment primarily consists of applying Ice Slicer as needed during the storm. Plowing may be required depending upon the weather conditions. If plowing is required, primary (red priority) snow routes are maintained throughout the storm. Lower priority routes are maintained as the storm abates or ends.

Category III Predicted Snow Fall Amount: 6” – 12”

Service Level: Maintain primary (red priority) and secondary (blue priority) routes during storm. Secondary (blue) priority routes may be delayed depending upon weather conditions. Lower priority routes require service at the end of the storm.

Materials: Ice Slicer as needed

Storms at this level require all available equipment, including snowplows and heavy equipment. Road treatment may initially consist of applying Ice Slicer at the onset of the storm, but typically progresses quickly to snow plowing with spot application of more material. During the storm, primary (red priority) snow routes are the only routes maintained. Secondary (blue priority) routes are treated and/or plowed as personnel and equipment are available after the first priority routes are completed. Lower priority routes are plowed after the snow has ceased and after the primary and secondary routes are cleared.

Category IV Predicted Snow Fall Amount: 12” or more

Service Level: Primary (red priority) routes remain passable during storm event. Secondary (blue priority) routes are plowed after the main arterial streets are fully opened and passable. Residential streets may be plowed after the storm if determined necessary by the Streets Supervisor.

Materials: Ice Slicer as the storm abates.

This category includes storms with sufficient snowfall to cause a major disruption in the transportation system. Major roadways, including interstate highways may be closed. Businesses and schools may also be closed. During the storm, primary (red priority) routes will remain passable. All other routes will be plowed as personnel and equipment permit, typically after snowfall has ceased. Snow removal may be required on residential streets depending upon the final storm accumulation. Storms in this category require all available Town personnel and equipment and may include contracted snow removal personnel and equipment.

Plowing/De-Icing of Non-Designated Streets

Under certain severe snowstorm conditions it may be necessary to plow all streets in the Town. The following conditions will be evaluated using the criteria listed in a Category IV deployment snow event to determine the necessity of plowing residential streets that are not designated in the plan. Some of the criteria used are:

Snow Fall Accumulation

Approximately 15 inches of snow should have accumulated in a 48-hour period.

Availability of Funds

Careful examination of the current year Snow Removal services budget as well as the status of snow removal reserve.

Time of Year

Stronger consideration should be given to plowing residential streets in the winter as compared to the spring and fall, when warmer weather is likely to melt much of the snow within two days.

Delay of Snow Removal Services

Removal of snow and ice is a difficult task. It is extremely rough on the equipment and on personnel. Delay of some services is inevitable. At least one or more of the following situations may delay all or some of the services provided during snow events:

- Vehicles parked and blocking the street;
- Vehicles getting stuck in the street blocking access for the plows;
- Equipment breakdown;
- Manpower shortage due to sickness, injury or vacation;
- Manpower shortage due to the length of the storm requiring personnel to be pulled off the streets for rest;
- Operator breaks for rest, meals, refueling, or for loading deicing material; breaks required to install chains and/or new cutting edges on snow plow blades;

- Downed trees and branches and utility wires can block access to entire neighborhoods;
- Frozen water mains divert snow fighting personnel to respond to the emergency;
- Daytime storm: traffic and pedestrians severely disrupt town's ability to deliver required services;
- Vehicles parked overnight in municipal parking lot limits our ability to plow these lots and require diverting specialized equipment off the streets and into the parking lots;
- Snow being placed on the street after we have plowed requires crews to return to these streets again, diverting attention from other needs;
- Weather so severe – as to cause crews to be called in for their own protection; and
- Unforeseen conditions and emergencies.

Some of these delays are unavoidable and caused by forces beyond our control and may require the Town to alter its procedures to resolve.

VI. Parks and Recreation Department

Snow Removal Policies and Procedures

The Parks and Recreation Department's snow removal responsibilities are primarily focused on plowing paved trails, and plowing sidewalks along Town property (property and business owners are required by town ordinance to keep the sidewalk in front of their property clear of snow and ice). All Town Facility walks are cleared of snow. De-icing materials are applied as needed.

For a complete showing of the Department's responsibilities please review the Park and Recreation's Snow Removal Map (*Appendix B*)

VII. After the Storm

After snowstorms the Town's snow plowing efforts will focus on the continuation of critical Town services such as restoring utilities; and public safety emergency response capacities. Additionally, snow removal operations will be conducted in certain areas of the town if temperatures are expected to remain low or more snow is expected. Other areas include locations in which heavy shading prevents melting and areas where the storm drainage system is entirely above ground. Crews will attempt to remove as much snow and ice as possible.

In addition to the above, begin the following procedures:

- Additional sanding may be needed;
- Cleaning of intersections as soon as possible;
- Inspection of all equipment utilized during the storm;
- Report needed equipment repairs;
- Inventory stockpile of de-icing material; and
- Have a post-meeting if necessary with all employees to discuss possible improvements.

VIII. Property Damage

During the course of operations throughout any given winter, a certain amount of damage to Town and private property may be incurred by snow removal forces. The Streets and Parks & Recreation Departments will repair damages as soon as the weather permits. Personnel are required to report all damages to their Supervisors. All property damage and accidents during snow removal operations will be handled in a manner that coincides with Town policy and Colorado State Statute.

Assistance to Motorists

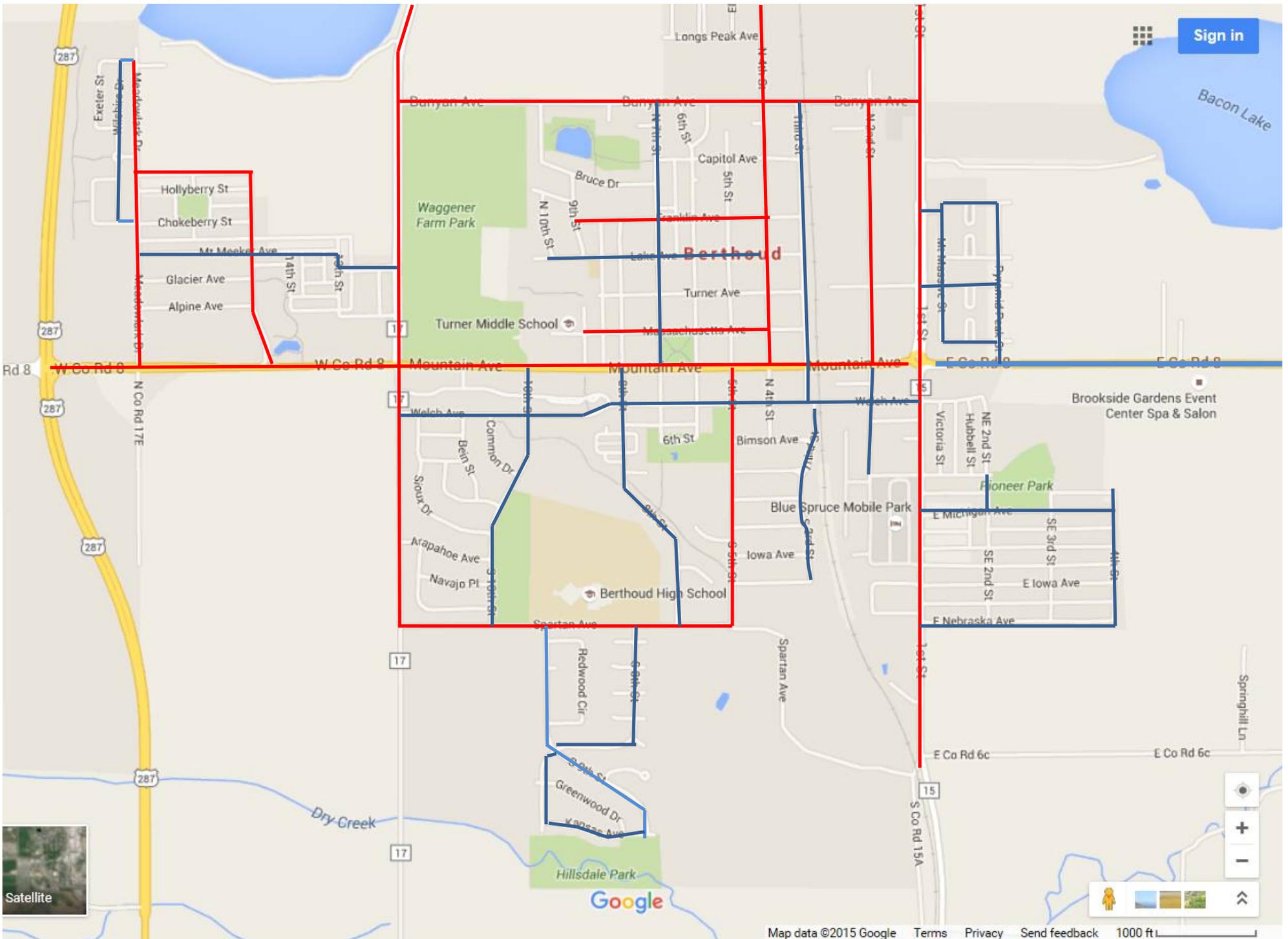
Under no circumstances will a Town employee be allowed to use a Town owned vehicle to push, pull, or tow a stranded vehicle from a roadway or parking lot. The employee should notify their Supervisor of any emergency situation encountered and the Supervisor will notify the appropriate agency. Under no circumstances will a Town employee use a Town owned vehicle to perform snow removal operations on privately owned, commercial, or residential property.

Complaints

Plowing snow during a snow storm is a formidable task. The hours can be extremely long, with operations conducted during the most severe weather and driving conditions, generally at night with very limited visibility. We realize that during an operation of such size and complexity there are bound to be complaints or requests for additional service. Calls for service should be avoided **EARLY** in a storm since it may take several hours for plows to make their way to your area. Town Hall will log your complaint and relay this information to the Operations Manager for a resolution. Please direct all comments and concerns to 970-532-2643.

X. Appendices

- **Snow Priority Map for Public Works Operations**
- **Snow Removal Map for Parks & Recreation**



Sign in

Bacon Lake

Berthoud

Waggener Farm Park

Turner Middle School

Berthoud High School

Hillsdale Park

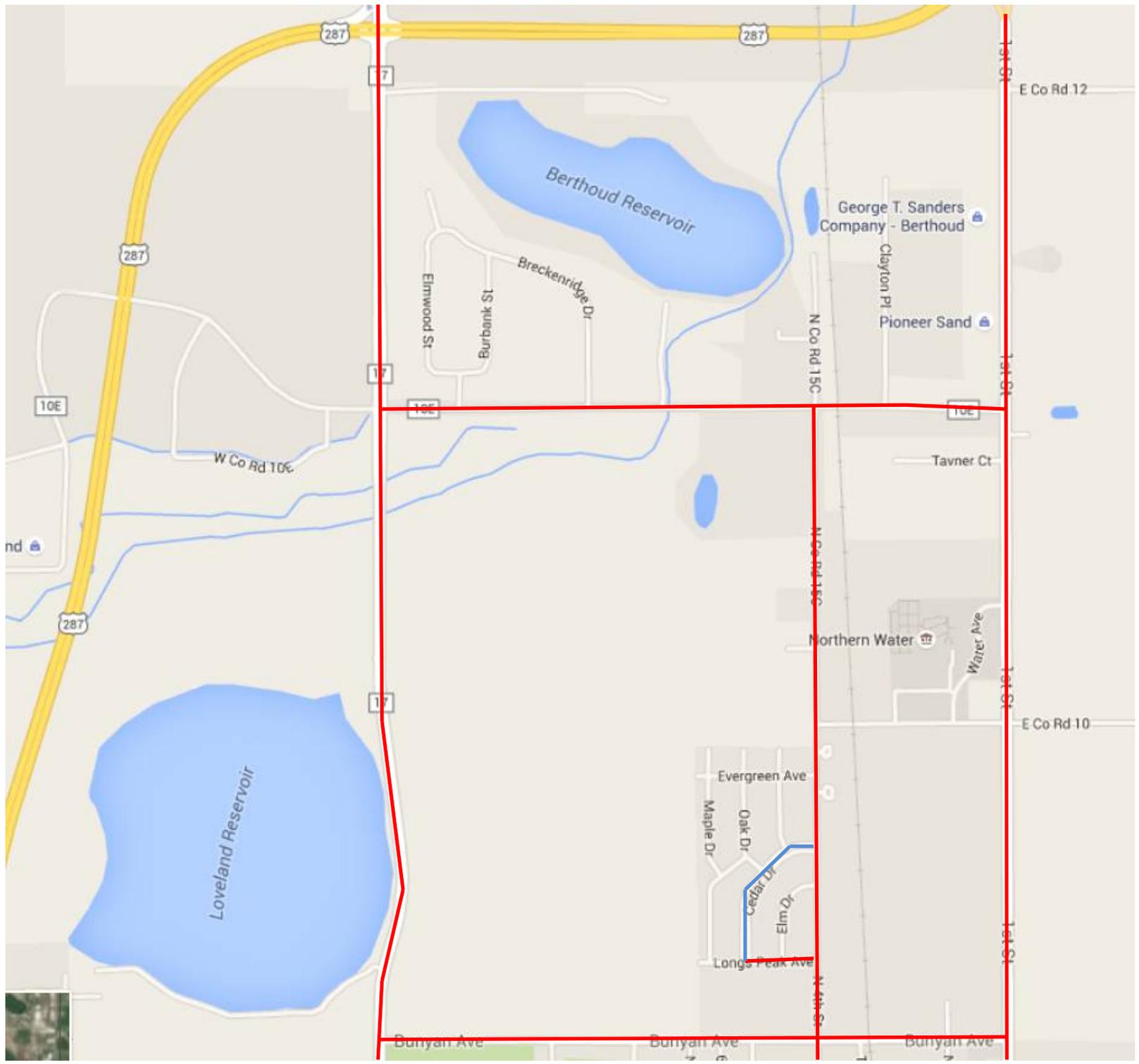
Brookside Gardens Event Center Spa & Salon

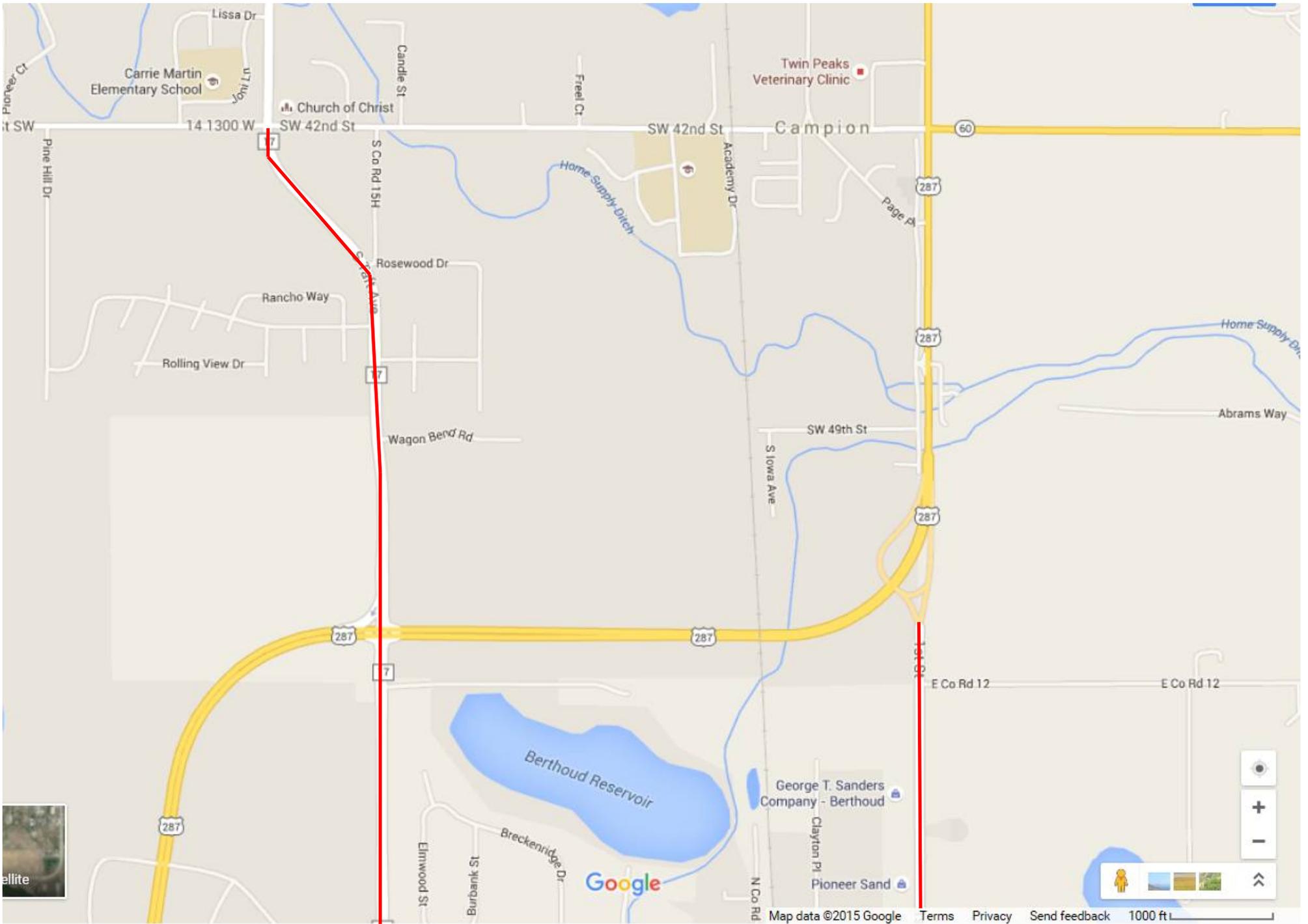
Pioneer Park



Satellite

Google





Google

