City of Boulder
Transportation & Utilities Maintenance
2012 - 2013

Snow & Ice Control Information

City of Boulder Public Works Department Street Maintenance Goal	**Date:** August 17, 2007
Subject: Snow Removal Policy and Procedures	**Approval:**

GOAL Our goal is to keep primary and secondary streets and on-street bike lanes open, and to use materials and equipment efficiently and effectively to reduce the dangers inherent in travel during inclement weather.

This goal will be achieved by having full crews for each snow shift, having equipment maintained and ready when needed, and by providing a safe environment for employees. This goal will also be achieved by having staff educated and trained on use of snow removal materials and equipment, and by involving staff in the development of policies and procedures.

PROCEDURES

Snow Call Employee Responsibilities:

1. In September of each year, two snow crew rosters are developed. Affected employees are assigned to a specific crew (A or B), snow route and vehicle. Each crew is assigned a dispatcher, a stand-by person, and an on-call supervisor.

   During the snow season (mid-September to the end of April or 30 weeks), each crew rotates on a weekly basis as the "first call" crew. A "stand-by list" for the entire season is produced and is provided to Communications. This weekly schedule shows:
   a) the dates of the week;
   b) the designated employee on stand-by;
   c) the on-call crew (A or B); and
   d) the on-call supervisor.

   In addition, all applicable home phone numbers, cellular phone numbers, and pager number are listed.

   Response to snow call is a requirement of the position.

2. Respond as quickly as possible. If you cannot respond due to sickness or some other appropriate reason, call the Standby Maintenance person immediately.

3. A normal work shift is eight hours, but a snow shift will typically be twelve hours.

4. If both crews have already worked some of their regular eight hour shift before a snow shift is called, the crew "on call" will continue to work for the designated snow shift and the other crew will be sent home and may return at the designated time to begin their snow shift if the storm event continues.

5. If a crew works either a full or partial shift, then is sent home for a later snow shift, those initial hours worked will be counted as straight time hours. When the crew returns for the snow shift, the time is counted as eight hours of straight time, plus accumulated overtime.

   Show up time of two regular hours will be given to each member of the crew sent home if a snow shift is called at the start of the normal eight hour shift (7am). These hours are not considered as hours worked and thus are not used to compute overtime. If an employee cannot be reached by phone or pager prior to the start of a snow shift and that employee shows up at the regular time (7am), an explanation will be requested from the employee as to why they could not be reached.

6. Snow shifts will end at the supervisor's, or his/her designee's discretion. An ending snow shift is the shift that is scheduled to get crews back to the regular work schedule. An ending snow shift is called when the snow event is under control to the point where staff can return to regular duties. An ending snow shift may be the final shift of the week to allow employees to achieve 40 regular hours or as close to 40 hours as possible. The supervisor, or his/her designee, will determine minimum staffing levels for the ending snow shift. If minimum staffing levels cannot be attained, then the entire ending snow shift will be canceled and no paid leave may be used.

7. While on snow shifts, normally 12-hour shifts, overtime will be <u>calculated</u> at the end of the first eight hours of the shift (8 hours straight time + overtime accumulated during that shift.) Overtime will be calculated in this manner only while an individual is on snow shift.

8. Pay periods run for two weeks beginning with Monday morning (12:00 am) of the first week and ending Sunday night

(11:59:59 pm) of the second week. Each week (Monday through Sunday) is distinct unto itself for the purposes of calculating overtime.

Time will be clocked by shift, not by physical day (midnight to midnight) except for on weekends. Where total hours worked during a shift will be placed for time sheet purposes, is determined by where the majority of hours occur. For example, if a snow shift is called for 11pm Monday night, the 12-hour shift will be carried forward into Tuesday and show as Tuesday hour worked (8 hours straight time + 4 hours accumulated overtime).

All hours worked while on snow shift occurring on weekend days (Friday 11:59:59pm to Sunday 11:59:59pm) will be recorded on the physical day. For example, if on shift from 8:00pm Saturday until 8:00am Sunday, time will be calculated at 4 hours on Saturday (8:00pm until midnight) and 8 hours on Sunday (midnight to 8:00am).

All hours worked from midnight Friday to midnight Sunday will be overtime hours as long as 40 hours have been achieved for the week, either by working straight time or overtime, by taking paid leave, or some combination thereof.

9. If an employee has already taken vacation time or sick leave before a snow shift is called, overtime will be calculated in accordance with Article IV of the BMEA Agreement (Section 7):

> "Hours paid for but not worked on holidays and for vacation and sick leave shall be counted as "hours worked" for the purpose of computing pay period overtime, except as limited as paragraph B.2."

Legitimate vacation and/or sick leave may be used for straight time hours. Sick leave may only be used for uses defined in the BMEA contract, and sick leave may not be used to finish or fill out an ending snow shift unless a doctor's note is provided to supervisor upon return to work by employee.

Where reasonable, vacation time may be granted by supervisor when requested by employee if service levels can be maintained. Vacation time called in the same day of the shift, without prior approval of the supervisor, will not allowed

to be taken as vacation time unless the supervisor grants an exception.

10. The city will make a good faith effort to schedule 40 hours of straight time work per week (Monday through Friday) during "workable hours" (i.e., the majority of hours to be worked need to be during daylight). When a snow shift is called off on a Friday, the shift will end no later than midnight Friday. The City will not schedule and ending shift of more than 8 straight time hours after the snow shift is canceled.

    An employee may not use any paid leave to cover any of the hours of the ending snow shift except sick leave may be used if a doctor's note is provided to supervisor upon return to work by employee.

    Show up hours may be counted toward the 40 straight time hours if needed.

11. The on-call crew will receive call back overtime pay for the first shift of a new snow event (if not already on a regular work shift), from the start of the snow shift until 7am, Monday through Friday, if snow crews have already worked a previous shift or were on approved paid leave during the previous shift (on Monday, a previous shift is considered Friday's shift), have left the work site, and are called back to work.

12. If the crews are already at work before a snow shift is called, the "on call" crew will receive end of shift overtime for all hours worked over eight hours of the shift. The other crew will not receive call back overtime. Everyone will receive overtime for all hours worked in excess of forty hours per pay period week.

    If it is snowing and an employee has not been contacted, the employee should call in to the snow dispatcher to verify a shift has been called before coming in to work.

13. Any employee may be sent home at the end of eight hours while on a 12-hour snow shift, if equipment is not available for use because of breakdowns, service, or other reason.

14. Any employee may be sent home at the end of eight hours while on a 12-hour snow shift any time less than a full crew is required to perform the needed service or tasks.

15. Exceptions for working a snow shift will be handled on a "case-by-case" basis. Employees may be required to find their own substitutes for snow shifts for situations that do not fall under "normal" absences from work. Such substitutes must be approved by the supervisor, or his/her designee, prior to when needed for the snow shift.

16. Employees are expected to take some of the responsibility to find out if a snow shift has been called when they are not at home. Employees who are on scheduled vacation are not expected to call.

17. Employees should keep their preferred notification method (telephone or pager) operational during snow season, and should keep it in allocation where it can be responded to when snow shifts are called.

    If notification method is by page, call the Standby Person or Dispatcher to verify receipt of page.

18. At the option/discretion of the supervisor, employees may be granted additional overtime to complete their paperwork or the employee may complete the paperwork at the beginning of their next shift.

19. Your lunch break **MUST** (note: this word was in bold type in the old policy and does not reflect new language) be arranged with the Dispatcher. This will ensure that all routes are continually covered during your shift. Your must call the Dispatcher when taking a break. Report when you start and end your break. Lunches and breaks should not be taken during rush hours. However, the driver may determine that his/her route is in a state that is consistent with the goals of this policy, and lunch may be allowed during rush hours. If this is done, the driver accepts responsibility for whether the determination he/she makes is one that will be acceptable to the supervisor.

20. No employee will ride in another truck without the dispatcher's or supervisor's approval.

All employees involved in snow operations may have to testify in legal proceedings as to their responsibilities and activities as outlined in these policies and procedures.

Supervisor Responsibilities:

1. One Street Maintenance supervisor will be assigned to snow crew A as their On-Call Supervisor and the other Street Maintenance supervisor will be assigned to snow crew B as their On-Call supervisor. Each On-Call Supervisor is responsible to and for their assigned snow crew's activities.

2. At the onset of a storm, the designated Stand-By Maintenance IV will call out the appropriate snow crew and inform the On-Call Supervisor.

3. Unless conditions warrant otherwise, one On-Call Supervisor will report to work (on site) to assist their designated crew prior to the start of the morning rush hour (approximately 6:00am) and the other On-Call Supervisor will be at work with their crew until evening traffic has subsided (approximately 9:00pm). This procedure will be followed during standard full shift storm conditions and/or while a storm is in progress. A four-hour overlap of coverage by both supervisor will occur to allow the supervisors time to accomplish necessary support duties and operational planning. The extended shifts will continue until both supervisors agree that all primary and secondary routes are in an acceptable and reasonably safe condition for use by the public. Unique or severe conditions may require changes in this schedule and will be dealt with as need dictates.

4. Once the storm has moved on and on-site duties have been met, the supervisors may turn over snow operations to the appropriate show shift dispatcher and return to their normal work shift.

This decision by the on-call supervisor does not remove or diminish any responsibility from the on-call supervisor.

5. During Off Hour snow operations (approximately 10:00pm – 6:00am), each On-Call Supervisor will be available to their assigned crew by phone, pager, or radio to assist and direct the snow crews as necessary. At any time, both On-Call Supervisors may be called upon to assist with snow operations.

6. On-Call Supervisors are responsible for monitoring local weather conditions and forecasts, including information from:

   - On duty police officers

- Area radio and television
- SSI and WSI real time weather database systems which include:
    - National Weather Service Family of Service Data
    - National Weather Service Weather Radar Network
    - GOES, Meteosat and GMS Satellite imagery
    - SSI Custom Forecasts
- CDOT and local roadway weather information from SCAN weather stations throughout the Metro area
- Personal on-site inspections

7. The On-Call Supervisor must be available at all times to respond to requests for advice or help from the Stand-by Maintenance IV and to respond to notification of immediate or impending weather related problems.

8. The Supervisors will review the snow log of all weather related calls made and received (time, agency, person, reason etc) as well as actions taken. Any calls or information received by the supervisors must be entered into the snow log database as soon as possible.

9. Prior to the beginning of snow operations, the On-Call Supervisors will ensure that:

    - All necessary resources including vehicles, sanders, plows, liquid de-icer tanks, telephones, radios and recording equipment are available and operational'
    - all malfunctions are reported to the appropriate agency; and
    - snow related activities are recorded on the Snow Log at the Snow Desk.

    They will also review with the Dispatchers and the Stand-by Maintenance IVs their responsibilities, crew assignments, equipment assignments, route assignments, priorities, special problems etc.

10. The On-Call Supervisors are responsible for any adjustment to scheduled snow shifts. This responsibility cannot be assigned to the dispatcher or the Stand-By person.

11. The Maintenance Coordinator may at any time make changes to the stand-by and on-call duties that are deemed necessary

to meet the needs of the Public Works Department and the City of Boulder. Changes may include, but are not limited to:

- the number of people assigned to stand-by duty;
- the number of hours, days, or weeks assigned to individuals; and
- the method of rotating stand-by duties between individuals.

Significant storm:

1. In the event of a significant storm (12" or more of snowfall), supervisors will inspect residential roads, bus shelters and cross walks for accessibility. If necessary and <u>with the approval of the Maintenance Coordinator</u>, residential roads might be plowed and accumulated snow at bus shelters and cross walks might need to be removed.
2. The Maintenance Coordinator will contact the PW Director for Transportation and provide feedback and possible proposed operations to remove the snow.

Standby Person Responsibilities:

1. Respond as quickly as possible. If for some reason you actual conditions so that you can determine if a full shift call out is necessary. Conditions may be such that less than a full shift can deal with the situation. If so, call as many people as needed. If in doubt call out a full shift or call the on-call supervisor.

2. For a full shift storm do the following:
   - Call Police Communications and let them know that the snow desk is staffed, crews are being called out, and that all future calls need to be directed to the snow desk.
   - Call the full crew (A or B)
   - Turn on the radio/phone recorder.
   - Call Fleet Services Supervisors or in-charge person and let them know Streets is on snow shift.
   - Call the On-Call Supervisor and inform him that you have called a shift, give the street and weather conditions, and let him know of any problems.
   - Remain at the snow desk until the Dispatcher arrives. The Dispatcher can then take over operations and you go to your assigned crew and/or route.

3. It is the responsibility of the On-Call Supervisor to end or adjust a snow shift. When such a decision is made the Dispatcher will notify crews and fleet Services.

4. Let the Dispatcher know of any conditions, concerns, or recommendations that might warrant the Dispatcher reassigning vehicles, changing routes, schedules, etc.

The on-call supervisor will be available at all times. Do not hesitate to call if needed for any reason.

REFER ALL MEDIA TO THE ON-CALL SUPERVISOR OR THE COORDINATOR

Dispatcher Responsibilities:

Under the direction of the On-Call Supervisor, the snow operations dispatcher will perform or direct the following tasks:

1. Assist the On-Call Supervisor, Standby maintenance IV, and crew with the initial start up of operations.

2. Review with the On-Call Supervisor on a regular basis, the assignment of crews and equipment to routes as well as any special problems or priorities resulting from a given storm.

3. Keep the Snow Log up to date. Be sure the information is complete and accurate.

4. Be sure **ALL** requests are recorded in the Snow Log by location, date, time received, source of call, time completed, and driver's name and radio call number.

5. Check radio/telephone recording system regularly to be sure it is operating properly. If problems with this equipment arise notify the supervisor.

6. Notify the ON-Call Supervisor immediately of any unusual problems or drastic changes in the weather.

7. Change routes and drivers whenever necessary to adjust for breakdowns, weather problems, or emergencies keeping in mind our snow removal priorities and the general safety of the public.

8. Inform on-coming shift dispatcher of equipment problems, route problems, unanswered special requests, etc.

9. Notify Fleet Services of equipment failures and needs. Record time/date on snow log when vehicle is taken in for service/repair and when returned to department for use.

10. Notify drives as to when and who will take lunch and breaks. Lunches and breaks should not be taken during rush hours. However, the driver may determine that his or her route is in a state that is consistent with the goals of this policy, and lunch may then be allowed during rush hour. If this is done, the driver accepts responsibility for whether the determination he or she makes is one that will be acceptable to the supervisor.

11. At the end of each shift, make sure that drivers and operators fill out time sheets, trip sheets, accomplishment forms and material usage log sheets. Accomplishment forms must include the number of tons or gallons of materials used, type of material, number of trips, etc.

12. The Dispatcher must contact their On-Call Supervisor whenever a situation arises that requires a decision or response that is not within the dispatcher's assigned duties or responsibilities.

Radio Use: While on snow shift, the following guidelines need to be followed by **ALL** equipment operators.

* Always use your radio call number when calling any base and between units. When using the radio speak clearly and slowly to ensure information is heard correctly by both the Dispatcher and the recorder.

* At the start of each shift, check the operation of the radio and mike.

* Inform the dispatcher when:
    a. leaving the Yards
    b. returning to the Yards
    c. loading more material
    d. taking the truck in to Fleet Services
    e. equipment breaks down; or
    f. when other problems develop

* Inform the dispatcher of location:
    a. at the beginning of your route;
    b. at the end of your route;
    c. approximately every 30 minutes while on your route; and
    d. when a special request is completed

✳✳ If Dispatcher does not respond go ahead and radio time request was completed and location for recording purposes. Follow up with radio call to Dispatcher to verify.

- ✳ Keep the Dispatcher and other drivers informed of road conditions or other problems (icy spots, drifting snow, potholes, accidents, traffic lights, and signs, etc)
- ✳ When answering calls from Police or other departments, **BE COOPERATIVE.** Inform them that they need to call the on-duty dispatcher or Base 5 cannot be contacted, it may be necessary for an individual driver to answer their call.

REMEMBER: our first priority is to keep the designated snow routes as safe as possible. Carefully consider the condition of your route and the importance of the call before responding.

***** SAFETY IS OUR FIRST CONCERN *****

- ✳ Use the radio to report everything and use appropriate radio protocol. Like pay telephones, radios are considered emergency devices by the City and the FCC. Inappropriate use of the radio is unlawful, dangerous, and may be used as grounds for disciplinary action including termination.

- ✳ **All radio communications are monitored and recorded.**

TRAINING:
Spreader Installation and Operation

1. Inspection of Spreader:
   Look for damage or items that might need attention before installing the spreader on to the truck.

2. Installation of Spreader:
   The loading of the spreader and removal of the tailgate shall be performed by two employees, and the employees shall wear steel toe shoes and hand protection.
   a. First, set the top chains to the proper length which will allow the tailgate to lay down flat after the pins are removed.
   b. Remove the tailgate pins.
   c. Lay the tailgate down onto the chains and reinstall the pins.

d. Place the vehicle (fork lift, loader, backhoe) in position to support and carry the tailgate.
e. Remove the top chains and release the tailgate latch and place the tailgate in the tailgate storage racks.
f. Inspect truck box and spreader before loading the traction material. Make sure the truck box is clean and clear of rocks and debris. NOTE: Avoid getting under the spreader, but if necessary, check to make sure that the four support chains are secure before doing so.
g. Clean all truck and spreader hydraulic fittings.
h. Position truck under the spreader: Remove the support chains and attach the spreader to truck box using chains or pins. There are different types of spreaders (V-Box and Tailgate). The v-box attaches with the tailgate latch device, chains, and boomers. The tailgate spreaders attach with the tailgate latching device and top pins. Please note that each type of spreader requires slightly different techniques for removing the support chains. These procedures will be demonstrated in the practical phase of training.
i. Make sure that the support chains are clear of spreader before driving away from the rack.
j. After driving away from the rack but before loading the spreader with material, connect hydraulic fittings and check operation of conveyor and spinner.
k. Load the truck with the appropriate traction material. The appropriate material will be determined by the dispatcher, based on the street conditions.
l. Spreaders should not be over filled to the point where material is spilling over the sides.

3. Spreader Adjustment
   a. Check the pattern of the spread material and be sure that the deflectors are adjusted properly to prevent over-casting of material.
   b. The typical pattern should be approximately four feet beyond each side of the truck while traveling at 20 miles per hour. If conditions warrant the need to travel slower or faster than 20 mph, the application rate will need to be adjusted.
   c. As the vehicle speed increases: increase the conveyor speed and decrease spinner speed and vice versa. The typical application rate is one (1) particle per square inch.

4. The items affecting the application rate are:
   a. vehicle speed
   b. conveyor speed
   c. spinner speed
   d. material feed rate: box spreaders have adjustable gates

5. The sequence to follow when applying material to a road surface will be determined by the:
    a. snow removal route
    b. type of vehicle

6. After the snow removal operation is complete:
    a. Empty the spreader material into the proper storage bin.
    b. Wash the truck and spreader with sander in the truck bed.
    c. Dismount the spreader onto the storage rack by reversing the procedure for installing the spreader in the truck bed.
    d. Clean the inside of the truck.
    e. Re-install the truck bed tailgate by reversing the procedure for dismounting the tailgate.
    f. Lubricate, check, and note if the spreader needs adjustments or repairs that need to be made by Fleet Services.
    g. Report any damage or need for adjustment of the vehicle or spreader to the Dispatcher before you leave.

Plowing Operations:

1. Plow Maintenance and Installation: This operation is better performed with two people.

    a. Match the truck number to the plow number located on the upper left hand corner of the plow.
    b. Check truck hitch; clean it from debris.
    c. Lubricate the entire surface of the plow hitch.
    d. Inspect and clean the hydraulic connection and hoses on both plow and plow hitch. Make sure that hoses are secure and not dragging.
    e. Position cylinder in the lower position (down position). If not, the operator needs to activate the hydraulic system and apply weight on the cylinder to attain the lower position.
    f. Put the latching mechanism into the locked position.
    g. Align the truck with the plow and proceed slowly into the plow to allow the plow to attach the hitch.
    h. Visually inspect the connections to assure that the plow is locked into position.
    i. Raise and lower the plow to check the hitch operation. Attach the hydraulic fittings used for turning the plow right and left. Operate the plow to determine that it will angle right and left.
    j. Inspect the blade for wear. If the blade is within ½" of the backing plates, the blade should be replaced. The blade should not be allowed to wear into the backing plate. This is considered excessive wear and can cause significant damage to the plow.
    k. Inspect plow blade bolts to be sure that all are secure and in good condition. If bolts are needed, contact Fleet Services.

l. Dismounting: Wash plow and inspect for damage. Any damage to the plow which has occurred should be reported immediately to the dispatcher for repairs to be performed by Fleet Services.

Liquid Tank and Box Installation:

1. Remove tailgate and safely store.

2. Raise dump box 3 -4'. This allows the bed to be slightly lower than the leading edge roller.

3. Back the truck up until the bed is under the roller and is nearly touching the front legs.

Loading of Multi-Units:

The loading and unloading of the multi-units follow the same procedure as the existing sanders and chemical tanks with the following exceptions:

1. When the dump body is under the caster wheels and the front legs have been lifted off the ground, tow pins will have to be removed to release the braces that lock the legs in place while on the ground so that the legs can swing up into the frame of the unit.

2. A second set of pins will have to be removed to allow the legs to telescope up into themselves.

3. Hold the bottom of the legs by the pad where there is a ninety-degree bend while removing the pin.

4. While swinging the legs up into the frame of the unit, adjust the length of the legs until they are able to lie in a portion of the frame that holds the legs in place when the unit is loaded in the truck.

5. Reinstall the pin back in the legs. This will lock the legs in place.

6. Take the braces and swing them up into the frame lifting them over the tabs inside the frame rail. This will hold the braces in place. Reinstall the pins in the braces. This will keep the pins with the unit.

7. Continue with the standard loading procedure while taking great care to load the unit as square and easy as possible. The existing multi-units have guide wheels for loading purposes because of tight clearances between the

chemical tanks and the walls of the beds on existing trucks. Unequal or harsh loading will result in damage to unit.

8. After unit is loaded, telescope rear legs into up position.

9. Hook and tighten boomers and chains.

10. Hook up electrical cord (round plug) to the truck by license plate. This powers tail, brake and turn signals on multi-unit.
11. Wipe off hydraulic fittings (both multi-unit and truck) and hook up lines to truck. **NOTE:** There are four (4) hydraulic lines on the multi-units. Three are placed together in a box on the lower right hand side of the dump body, with the fourth located on the lower right hand side of the frame on the truck.

12. Remove the cover from the black rectangular electrical box on the truck.

13. On the multi-unit is a black rectangular plug. Remove it from its locked position and plug it into the truck receptacle.

14. To unload, reverse loading procedure.

Loading of Equipment:

When snow is predicted and a supervisor determines that equipment needs to be loaded, where possible the "on call" shift will load equipment. If the entire shift is not available, employees from both transportation and utilities maintenance may be asked to load equipment.

Unloading of Equipment:

When snow shift has ended, ***the ending shift is responsible for the unloading of trucks.*** If shift ends after dark on a weekday or on a Friday, the ending shift will unload the equipment the next business day (Monday in the event of a weekend). The only exception is if utilities employees are needed for utility tasks as determined by the supervisor, not the employee. Ending shift employees are to check in with their dispatcher or shift supervisor for unloading and/or cleaning assignments.

Dispatch Operations:

It is expected that all communication to the dispatcher will be tape recorded. The dispatcher will be expected to log contacts and identify dispatched drivers into the computer. The dispatcher will log at a minimum:

a. Location
b. Time of Call
c. Contact Person (Source)
d. Any specific considerations
e. Time at which task was completed
f. Driver radio call number
g. Identification of dispatcher

h. Any other pertinent information which may be beneficial

OVERVIEW AND PROCEDURES FOR SNOW ROUTE OPERATORS TRAINING

Formal in house training of ALL route drivers shall include:

1. ROUTES: Know the route – all drivers on the same route should cover the route the same way and should know areas are most important.

   * Get consensus on where and when to start primary and secondary routes

2. SPREAD: How to set and operate spreaders, application rates, and patterns. Be aware of blasting cars, buildings, people, etc. Set deflectors to minimize blasting.

   - When, where, and how to spread materials, hills, intersections, turn lanes, and elevated curves. Special areas such as schools, hospitals, churches, and hazardous areas.

   - Spot spreading – how, when, where – Be aware of problem intersections and streets where icing can be a problem.
   - Know how the spreader operates and problems that can occur; box operations (lowering and raising) for tail gate spreaders

3. TRACTION MATERIAL/CHEM MIX
   a. how to mix, amount to mix, etc
   b. when to use mixed material
   c. when to use only chips

4. WHEN AND WHERE NOT TO SPREAD TRACTION MATERIALS:

5. RADIO:
   a. Dispatcher
   b. Police: May call in request for plowing or sanding, but priority is set by Supervisor or Dispatcher

6. OTHER:
   a. Log 10-7 or 10-8
   b. Communication between units
   c. Information from drivers to dispatcher
   d. Start, end and specific location reporting

e. All communications are monitored
f. Use radio to identify everything and use protocol that is consistent.

7. MECHNICAL OVERVIEW/PROCEDURE

8. SNOW TRAINING LOG:

(Each employee is expected to sign the form shown below upon completion of snow training exercises.)

I have been provided training on the above topics and given the opportunity to understand and practice snow route, sanding and plowing procedures.

PRINT NAME	TOPIC	SIGNATURE
	Routes	
	Spread	
	Traction Material/Chem Mix	
	When & Where Not to Spread Traction Materials	
	Radio	
	Other	
	Mechanical Overview/Procedure	
	Snow Training Log	

Mechanical Areas of Concern:

1. TRUCKS – Areas of Concern
   a. Check hydraulic oil level at start of each shift and fill if low.
   b. Lube plow frame with spray lube at **least** once per shift
   c. Make sure that plow & plow frame fit each other (no more than ½" of space on any side.
   d. Use the rubber plugs attached to the quick couplers whenever you disconnect a plow or sand spreader.
   e. Of the rubber plugs are missing, you must get them replaced. This is essential as dirt in the quick couplers will end up in the hydraulic system and this will quickly ruin expensive components resulting in loss of truck usability.
   f. If, while plugging hydraulic hoses in, there is noticeable dirt, ice, or other foreign matter in the quick couplers, wipe them out thoroughly with a clean rag. They will **NOT** connect properly if this is not done and dirt will enter the hydraulic system.
   g. When removing tailgate for snow duty, be sure and put all tailgate pins in a safe place. You will need them later.

h. Check plow mount at least once per shift for cracks, latches that operate properly, etc.
i. Make sure the alcohol injection system is full at the beginning of each shift.
j. Make sure windshield washer fluid level is filled a the beginning of each shift.
k. Clean ice build-up off of tail lights, strobes, and caution signs as often as possible.
l. Look at truck suspension (does it lean one way or the other excessively) springs tend to break much more frequently in extreme cold (could cause a rollover if not detected).
m. Check wheels for cracking, especially in extremely cold weather (cracks my originate at lug nut holes or between other access holes.)
n. Load truck beds evenly (not to one side or the other).
o. Watch for large rocks or clods of frozen material (throw them out of the load) they will jam in the spreader and destroy expensive components.
p. Drain air tanks (all of them) completely at least once per shift.
q. Keep fuel tanks as nearly full as possible at all times.
r. A 10 mph speed limit in the City Yards area should be **STRICTLY** enforced.
s. Strobe lights should be turned on at all times (day and night) when driving a sand truck on any street.
t. When removing tailgate from dump bed, **NEVER** leave it laying flat on the ground; it **WILL** get run over after it is covered with snow and won't fit the truck when it is needed again. **ALWAYS** put tailgates in the rack provided and mark it with the appropriate truck number. Most tailgates look alike and will be difficult to match to the proper truck if not marked in advance.

2. SPREADERS – Areas of Concern
   a. Make sure spreader is centered in dump bed and tightly secured with tailgate **LATCH AND CHAINS.**
   b. Lube bearing on each end of the unit at least once per shift.
   c. When possible use a spotter to help with backing up the unit (poor visibility and backing up equal damaged spinner assemblies and down time).
   d. When hanging spreader back up in storage rack, take time to clean unit thoroughly with a hose, and lube conveyor chains with spray lube while it is running.
   e. When loading material into spreader, **NEVER** let loader bucket come in contact with any part of the spreader unit.
   f. Do not pack down the load with the bottom of the loader bucket after unit is full.
   g. Do not heap the load higher than the top of the spreader (this constitutes an overload condition and could be dangerous as well as stopping the conveyor).
   h. **NEVER** push on any part of the spreader unit with a front-end loader.

i. Make sure the spreader box is centered in truck and latched in place **BEFORE** removing from storage rack.
j. **NEVER** attempt to load a spreader without a spotter.
k. **ALWAYS** use the cat walk to get on top o of the storage rack (some serious falls have occurred in the past from climbing up the sides of dump trucks.)
l. Take your time when hanging spreaders back up in the storage rack. Make sure they are hanging level **AND** high enough to get back under next time. Put them back in the same slot that they came from.
m. Spreader operation should be intermittent and not continuous. Intersections, hills, and trouble spots should be treated, but not necessarily the entire street from one end of the route to the other.

3. PLOWS – Areas of Concern
   a. When running plows in the down position, take the weight off of the cutting edge by raising the hydraulic lift cylinder slightly (not enough to lift the cutting edge off the pavement, but enough to bear the majority of the plow weight).
   b. Check cutting edge wear frequently and have edges replaced if they are worn to within 1 inch of mold board.
   c. Check cutting edge bolts frequently for looseness of missing bolts.
   d. Check plow lift cylinder and angle cylinders at least once per shift for leading seals, hydraulic lines, missing pins, etc.
   e. Make sure plow has both orange plow guides attached at all times. If one is missing or broken, have it replaced immediately!
   f. Check plow frame and superstructure for cracks at least once per shift.
   g. When putting plows away after use, be sure and snap quick couplers together or install rubber plugs provided. Failure to do so will damage hydraulic components if dirt is allowed to enter the hydraulic lines.
   h. When storing plows in the storage area, block up plow frame so that it is perfectly straight up and down. If this not done, the plow will be difficult to attach to the truck next time.
   i. Before the start of each shift, check plow edges and mold boards for excessive wear, broken corners, or bent condition. Report deficiencies to the shop immediately.
   j. **NEVER** set the plow corner hard against a curb and use it to guide the truck. This results in immediate damage to the plow, curb, and gutter. This is time consuming and expensive to repair.
   k. Do **NOT** attempt to move large piles of frozen ice and snow with any plow. If these piles have been allowed to sit for any length of time, they are virtually immovable and will destroy the plows and hydraulic components.
   l. Do **NOT** operate plows in the straight position (i.e. the non-angled position) on any City street. The cutting edge **WILL** hang up on street seams and expansion joints at bridges and cause serious and expensive damage to plow, truck, and driver.

m. **NEVER** install a plow on any other truck other than the truck number listed on the plow. If an emergency occurs that requires this to happen, **ALWAYS** get a mechanic to check the fit, line clearance, etc. **BEFORE** moving the truck or lifting the plow.

ADMINISTRATIVE PROCEDURES

1. Individual: Crew members shall fill out a daily task form for each shift. Said form shall list the route number, date, equipment used, type and amount of material used, name of personnel, and the number of hours worked.

Not filling out a daily task form may be grounds for disciplinary action.

2. Supervisor: Street maintenance supervisors will insure that each snow shift crew member fills out a daily task form.

Trackless Route - Unit #6046

Floater Route – these units are pickups, with a sander or chemical tank and a plow.

TRACKLESS SNOW ROUTE

Updated 9/1/08

1. 55th & Pearl From Bus Stop on Pearl

A. Sidewalk on 55th from S/W corner to #2500 property (1st Bldg.)
B. Sidewalk on 55th from S/E corner to Flatiron Dr.
*** Plow away from street**

2. 55th & Centennial West

A. Bikepath from 55th to Centennial & back (2 passes) Two Passes
B. Ramps and 55th underpass cleanup
C. On 55th St. West side from Centennial Trail South to Pennsylvania - Plow to Street
D. On 55th St. East side from Golf Course Fence to Pennsylvania - Plow to Street
*** Keep underpass as clear as possible - plow snow to drain side**

3. Roxwood Lane

A. East sidewalk from Pennsylvania to Cypress (full length of street) & access sidewalks to crosswalks
*** Watch for rocks lining sidewalk on left, about half way down**
*** Cars frequently parked close to sidewalk**
*** Plow away from street**

4. 55th & Baseline

A. North sidewalk on Baseline from 55th to Foothills - Plow away from street
B. South sidewalk on Baseline from Foothills to apt. property line - Plow toward Street
*** Watch for raised sidewalk joints**

5. Eisenhower & Pennsylvania

A. Creek sidewalk overpass (both sides of street) to private property lines
*** Plow toward street**
B. Sidewalk behind schools / church on Pennsylvania (access via bike path east of Eisenhower)
*** If bike path not plowed, pick a side and plow snow downhill while accessing sidewalk**

6. Arapahoe & Foothills

A. South sidewalk on Arapahoe from corner to private property
*** Access via bike path west from Eisenhower & north along Foothills**
*** Plow snow to gutter**

7. North Overpass

A. Pedestrian/bike overpass over Foothills between Arapahoe & Baseline
*** Access via same bike path used to access Arapahoe & Foothills (#6)**
*** Two passes required; push snow to inside wall (left if starting from east)**
*** Use a third pass to access west side of Foothills and clean up overpass overflow**

8. Baseline / Inca / Gilpin

A. North sidewalk on Baseline from Inca to Gilpin Circle
*** Plow away from streets**
B. Gilpin Circle south sidewalk between bike path and private property

* **Plow toward street in gutter**

C. Sidewalk from Gilpin Circle to Baseline bus stop

D. Bike path ramp cleanup on both sides

E. Bridge on Gilpin Cilrcle, both sides to Street in gutterline

9. Baseline & 37th

A. South sidewalk on Baseline from church property line to stop sign near 38th

* **Plow toward street in gutterline**
* **Don't block driveways**

10. South Overpass @ Sioux

A. Pedestrian/bike overpass over Foothills between Baseline & Table Mesa

* **Two passes - divide snow between both sides**

11. Thunderbird & W. Sioux

A. West sidewalk (multi-use path) from Sioux to end of Thunderbird (start of Apache)

* **Two passes - Plow away from street**

12. Table Mesa & Hwy 36

A. Sidewalk from Thunderbird up Hill to Table Mesa, going toward RTD Park-N-Ride

B. North sidewalk on Table Mesa from apartments west to Hwy 36 overpass

* **Plow toward street even where red concrete exists on street side-Place snow in Gutter**
* **Narrow sidewalks east of Foothills underpass**
* **Low hanging evergreen branches from RTD crosswalk to Hwy 36 overpass**
* **Skip Hwy 36 overpass - too narrow**

C. West end of Hwy 36 north overpass to private property west of Hwy 36

* **Include off ramp island, all paved areas**
* **Watch for large manhole cover on sidewalk west of Hwy 36 off ramp, near private property line**

D. South sidewalk from Hwy. 36 on ramp to gas station @ Manhatten Circle

* **Plow away from street except where red concrete exists on street side**
* **Narrow sidewalks east of Foothills underpass**
* **Watch for Large expansion joints going over Hwy 36 overpass**

13. Table Mesa & 46th

A. North sidewalk from 46th to Broadway

* **Plow snow onto red concrete, outside portion of sidewalks**

B. South sidewalk from Broadway to 46th

* **Plow snow onto red, outside portion of sidewalks**

14. Skunk Creek

A. West sidewalk from 27th Way & Broadway to Skunk Creek underpass

* **Plow snow west**
* **Large expansion joints between Bluebell & underpass**

14A. A. Broadway and Regent Tunnel

Clean West Entrance to tunnel-place snow along North Wing Wall

15. Broadway & Baseline

A. Southwest sidewalk from Baseline to bus stop

*** Plow away from street**

16. Broadway & 27th Way

A. South sidewalk from driveway to driveway

*** Plow away from street**

B. Mini Park between driveways (Pocket Park)

*** Two passes, snow to downhill (east) side**

17. Baseline & 30th

A. Sidewalk & all paved areas of north east corner island

B. Sidewalk from corner island east to 31st St.

*** Plow away from street**

18. 30th & Colorado

A. West sidewalk on 30th from Colorado north to bridge

*** Plow toward street in gutter**

19. 28th Frontage & Aurora

A. Entrance to tunnel

*** Plow toward street in gutter**

20. 28th Frontage & College

A. Entrance to tunnel & access ramps

*** Plow toward street in gutter**

21. Broadway & 14th (College Tunnel)

A. Ramp and circle & bottom of steps

*** Plow to north side of circle & east side of ramp**

22. Grandview & 15th

A. Sidewalk from north corner to bike path

*** Plow away from house**

23. Arboretum & Bike Path

A. From gate to steps

*** Key # 2872 needed to open gate**

*** Plow to north**

B. Clean up bike path corners, curves & intersections from Arboretum to Arapahoe

24. 9th & Portland

A. West sidewalk, from alley way on 9th across from Portland, to Maxwell

* **Narrow sidewalk**
* **Plow away from street**

25. North St. (1453)

A. Path between houses

* **East of Broadway**

26. Broadway & Iris

A. West sidewalk from Iris to Juniper

* **Narrow sidewalk**
* **Large expansion joints**
* **Low hanging branches**

27. Broadway & Linden

A. West sidewalk from Linden to Poplar

* **Narrow, raised sidewalk going up hill**
* **Plow away from street**

28. Wonderland Hills Dr. & Linden

A. From corner north on Wonderland Hills to path intersection- plow to street

29. Broadway & Redwood

A. East sidewalk from Redwood to Sumac plow away from Broadway
B. West sidewalk from Redwood to Sumac plow away from broadway

30. 26th & Agate

A. East sidewalk & creek overpass from driveway to driveway

31. Iris & 28th

A. Sidewalk from southeast corner to liquor store parking lot north of Albertsons parking lot

32. 47th St. & Soccer Fields

A. West sidewalk north of ball parks from end of private property, south to ball park entrance
B. West sidewalk from ball park entrance, south to Diagonal Hwy

* **Plow away from street**

33. 47th & Valmont

A. South sidewalk on Valmont from 47th to Foothills

* **Plow towards street in gutter**

SNOW Hand Removal Routes –updated 9/1/08

17th Street Bridge, East and West sides
Arapahoe and 28th
Arapahoe and 30th
Arapahoe and Foothills, crosswalk at Islands
Baseline and Broadway Crosswalk
Baseline and Foothills, crosswalk at Islands
Baseline and 27th Way, mini-park
Bridge overpass at 38th and Boulder Creek: South Side Sidewalk
Canyon and 11th
Canyon and 21st street Crosswalk
Canyon and 28th Crosswalks and Porkchops
Canyon and 9th
City Yards-Front sidewalk areas
Colorado and 28th
Colorado and 30th
Eisenhower and 48th St., North West corner mini-park
Foothills and Pearl Street, all crosswalk areas and porkchops
Folsom and Walnut Intersection
Grape and 9th street, crosswalks
Goss and 21st, mini-park
Goss and 23rd, mini-park
Grove and 18th, mini-park
Grove and 19th, mini-park
Grove and 20th, mini-park
Grove and 21st, mini-park
Grove and 23rd, mini-park
Hanover and Broadway, East side
Hollyberry by Fox Tail
Iris and 15th, mid-block crossing
Iris and 28th
Lehigh and Table Mesa, median
Mapleton, 4th through 9th Street crosswalks
Moorehead and 27th
Pearl and 15th
Pearl and 28th
Pearl and 29th St. Crosswalk between Whole Foods and Target
Pearl and 30th
Pearl and 55th Street, crosswalk at Islands
Pearl Street and Foothills, all four crosswalks
September School, 19th and Walnut mini park
Shadow Creek – retaining wall South of Scott Carpenter Park on 30th

Skunk Creek & 27 Way Underpass stairs and ramps
Spruce and 8th St., small park walk through
University and 9th, NorthEast corner
University and 9th, SouthEast corner
University and 9th, SouthWest corner
Valmont and 28th
Valmont and Foothills, crosswalk at Islands
Valmont and 34th St. mid-block crossing (across from Sutherlands)
Valmont crosswalk West of Foothills near Center Green Court
Walnut and 11th crosswalks
Walnut and 19th, mini-park
Walnut and 23rd, mini-park
Wonderland Hill Dr.: from end of parks path to start of 1st driveway

THE SHIFT WORKER...

Do you work at times other than the usual "nine to five" business day? If so, you are among the millions of shift workers in America's workplace. You may work when most people are asleep and attempt to sleep when the rest of the world is awake. Shift workers perform critical functions in hospitals, on police forces, as emergency personnel, and in the transportation and manufacturing industries. In addition, they are meeting the demand for "round-the-clock" service in an age of global interaction. More than 15 million Americans are shift workers.

AND SLEEP...

Unfortunately, when it comes to sleep, most shift workers don't get enough. When shifts fall during the night (11 p.m. to 7 a.m.), the worker is fighting the natural wake-sleep pattern. It may be hard to stay alert at night and just as hard to fall asleep and stay asleep during the day. Night workers typically get less sleep than daytime workers do, and the sleep is less restful. Sleep is more than just "beauty rest" for the body; it helps restore and rejuvenate the brain and organ systems so that they function properly. Chronic lack of sleep harms a person's health, safety, productivity, memory, and mood.

SLEEP AND THE CIRCADIAN CLOCK

Sleep is needed by all animals — even plants appear to have rest periods. The human body naturally follows a 24-hour cycle of wakefulness and sleepiness that is regulated by an internal circadian clock. In fact, the circadian clock is linked to nature's pattern of light and darkness. The clock regulates cycles in body temperature, hormones, heart rate and other body functions. For humans, the desire to sleep is strongest between midnight and six a.m. Many people are alert in the morning, with a natural dip in alertness in the mid-afternoon. It is difficult to reset the internal circadian clock. It is not surprising that 10-20% of night shift workers report falling asleep on the job, usually during the second half of the shift. That's why shift workers who work all night may find it difficult to sleep during the day, even though they are tired.

WHEN YOU DON'T GET ENOUGH SLEEP

According to National Sleep Foundation polls, the overwhelming majority of people report that they do not get enough sleep (most adults need 7-9 hours of sleep). When sleep deprived, people think and move more slowly, make more mistakes, and have difficulty remembering things. These negative effects lead to lower job productivity and can cause accidents. The financial loss to U.S. businesses is estimated to be at least $18 billion each year! Lack of sleep is associated with irritability, impatience, anxiety, and depression. These problems can upset job and family relationships, spoil social activities, and cause unnecessary suffering. Shift workers experience more stomach problems (especially heartburn and indigestion), menstrual irregularities, colds, flu, and weight gain than day workers. Heart problems are more likely too, along with higher blood pressure. The risk of workplace accidents and automobile crashes rises for tired shift workers, especially on the drive to and from work.

GETTING READY FOR SUCCESSFUL SHUTEYE

There are several steps a shift worker can take to successfully *fall* asleep and *stay* asleep (see Tips List). The key is to **make sleep a priority!**

Set the stage for sleep even though it might be broad day light outside. Prepare your body and mind for sleep. If you are on the night shift, wear wraparound dark glasses on your way home from work to keep morning sunlight from activating your internal "daytime" clock. Follow bedtime rituals and try to keep the same sleep schedule — even on weekends. Go to sleep as

soon as possible after work.

At home, ask family and friends to help create a quiet and peaceful setting during your sleep time. Have family members wear headphones to listen to music or watch TV. Ban vacuuming, dish washing, and noisy games during your sleep time. Put a "Do Not Disturb" sign on the front door so that delivery people and friends will not knock or ring the doorbell. Schedule household repairs for after your sleep time.

TIPS FOR SUCCESSFUL SHUTEYE

BEDTIME RITUALS

* Take a warm bath.

* Lower the room temperature (a cool environment improves sleep).

* Don't "activate" your brain by balancing a checkbook, reading a thriller, or doing other stressful activities.

LIGHT

* Darken the bedroom and bathroom.

* Install light blocking and sound absorbing curtains or shades.

* Wear eye shades.

SOUND

* Wear ear plugs.

* Use a white noise machine or a fan to block out noises.

* Install carpeting and drapes to absorb sound.

* Unplug the telephone.

BALANCING LIFE AND WORK

The shift worker faces special problems in trying to maintain family relationships and social and community ties. It becomes difficult to balance work, sleep and personal time. The need to sleep during the day (or, for the evening worker, to be on the job during the dinner hour and the family-oriented part of the day) means that the shift worker often misses out on family activities, entertainment and other social interaction. That is why it is important to talk with family members and friends about your concerns. With their help, you can schedule special times to share with a spouse, children and friends. Remember that sleep loss and feeling at odds with the rest of the world can make you irritable, stressed and depressed. As one expert puts it, "Blame the shift work — not your kids!"

TIPS FOR SUCCESSFUL SHUTEYE

FOOD

* Avoid caffeine at least five hours before bedtime.

* Don't stop for a drink after work; while you may feel relaxed at first, alcohol actually disturbs sleep.

* Eat a light snack before bedtime. Don't go to bed too full or too hungry.

EXERCISE

* If you exercise at the workplace, do so at least three hours before you plan on going to bed. Otherwise, exercise after you sleep. Because exercise is alerting and raises the body temperature, it should not be done too close to bedtime.

NAPPING

It is important to keep a regular sleep schedule, even on days off and weekends. However, if you can't get enough sleep or feel drowsy, naps as short as 20 minutes can be helpful. Naps can maintain or improve alertness, performance and mood. Some people feel groggy or drowsy after a nap.

These feelings usually go away within 1-15 minutes, while the benefits of the nap may last for many hours. The evening or night worker can take a nap before work to be refreshed.

Studies show that napping at the workplace is especially effective for workers who need to maintain a high degree of alertness, attention to detail, or make quick decisions. In situations where the worker is working double shifts or longer, naps at the workplace are even more important.

THE RIDE HOME

Driving home after work can be risky for the shift worker, particularly since you have been awake all night and the body needs to sleep. For the evening worker coming home around midnight, the risk of meeting drunk drivers is higher. People think that opening the car windows or listening to the radio will keep them awake. However, studies show that these methods do not work. In fact, these actions should signal you that you are fatigued and need to pull over immediately. If you are sleepy when your shift is over, try to take a nap before driving home. Remember, sleep can quickly overcome you when you don't want it to.

FOLLOW THESE STEPS TO ARRIVE HOME SAFELY:

1. Carpool, if possible. Have the most alert person do the driving.

2. If you are sleepy, stop to nap, but do so in your locked car in a well-lit area.

3. Take public transportation, if possible.

4. Drive defensively.

5. Don't stop off for a "night cap."

PROMOTING ALERTNESS AT WORK

Just as you can take steps to ensure a good night's — or day's — sleep, you can try these steps to stay alert on the job.

* Take short breaks throughout the shift.

* Try to work with a "buddy."

* Talking with co-workers can help keep you alert. And co-workers can be on the lookout for signs of drowsiness in each other.

* Try to exercise during breaks.

* Use the employee lounge, take a walk, shoot hoops in the parking lot, or climb stairs.

* Try to eat three normal meals per day. Eat healthy snacks, avoiding foods that may upset your stomach.

* If you consume caffeine (coffee, tea, soda, energy drinks, gum, mints), do so early in the shift, e.g., before 3 a.m. for the night worker.

* Don't leave the most tedious or boring tasks to the end of your shift when you are apt to feel the drowsiest.

* Night shift workers hit their lowest period around 4 a.m.

* Exchange ideas with your colleagues on ways to cope with the problems of shift work.

Set up a support group at work so that you can support and learn from each other.

FOR THE EMPLOYER

There are a number of ways you can make your workplace safer and more productive for your shift workers. Educate managers and shift workers about the need for sleep and the dangers of fatigue.

* Install bright lights in the work areas. A well-lit workplace signals the body that it is time to be awake and alert. Provide vending machines with healthy food choices.

* Schedule shifts to allow sufficient breaks and days off, especially when workers are re-assigned to different shifts. Plan enough time between shifts to allow employees to both get enough sleep and also attend to their personal life. Don't promote overtime among shift workers.

* Develop a napping policy. Encourage napping by providing a sleep-friendly space and time for scheduled employee naps. A short break for sleep can improve alertness, judgment, safety, and productivity.

* Be concerned about employee safety going to and from work. Encourage the use of carpools, public transportation, rested drivers, and even taxis.

SEEKING MEDICAL HELP

If you have trouble falling or staying asleep, or you wake up feeling unrefreshed, you may be suffering from insomnia or sleep apnea, serious conditions that should be treated. Be cautious about self-treating the symptoms of these conditions. Your

doctor can suggest safe and effective options.

Remember, when you are not getting the sleep you need, you are at risk...and so are those around you. Inadequate sleep increases your risk for falling asleep at the wheel, accidents on the job, and problems at home. Your doctor can help identify the cause, which can be successfully treated or managed.

Your doctor can evaluate your sleep problem and determine whether you may have a sleep disorder.

Sleep specialists have additional training in sleep medicine and can both diagnose and treat a variety of sleep disorders. Many sleep specialists work at sleep centers.

A LAST WORD... OPERATING EQUIPMENT SAFELY

If you operate heavy equipment, drive a vehicle during your shift, or provide health care, you must pay careful attention to signs of sleepiness or fatigue. To ignore signals such as yawning, frequent blinking, a sense of tiredness and a failure to make routine safety checks may put you and others at risk. If you feel sleepy or drowsy, stop your work as soon as safely possible. Contact your supervisor and request a break or nap, or have a caffeinated product in order to help increase alertness. Remember, caffeine is not a long-term substitute for sleep.

What effect does the sleep you got last night have on the way you do your job today? Chances are...more of an effect than you think. May people assume that staying up a few extra hours to read or watch television is no big deal, but experts now agree that loss of sleep has detrimental effects on productivity, creativity and safety. Recent studies show that more Americans are suffering from sleep deprivation than from alcohol and drug abuse.

How much sleep is enough? Eight hours a night is the recommended minimum, but most Americans get seven hours or less. By the end of a week this can add up to an entire night loss of sleep. If you lose two hours of sleep in one night, you can expect a significant impact the next day, as much as a 20% drop in memory, a 30% loss in the ability to communicate effectively, a 75% drop in the ability to pay attention and a 50% decrease in judgment and decision making skills.

Some workers are more prone to sleep loss: Night workers, shift workers, workers who cross time zones and workers with long work days. Unfortunately, as more and more companies try to find ways to improve productivity, more night shifts, swing shifts and long shifts are being added.

If you are sleeping less than the recommended eight hours per night, try to get more. Follow these suggestions for getting the most out of the sleep you do get:

- Keeping your bedroom quiet, dark and cool will aid sleep; a drop in core body temperature is a cue for your body's sleep response
- If you work nights or shifts, sleep during the day may be your only option. Use thick curtains or shades to block out as much sunlight as possible.
- Use a fan or some other white noise generator to block out noises that may keep you awake or disturb your sleep.
- Use your bedroom for sleeping; not for television viewing or as a home office.
- Avoid taking caffeine within five hours of going to bed.
- Comfort foods, such as warm milk, can help induce sleep.
- Avoid alcohol at bedtime. While alcohol can make you sleepy, it can also interfere with the deep sleep that your body needs to feel fully rested.

While these suggestions can help your nighttime sleep, you can also increase your alertness by napping. Studies have shown repeatedly that short 20-minute naps can greatly improve productivity. There are even companies that are incorporating naps into the daily routine.

For more information on sleeping habits and sleep deprivation visit the National Sleep Foundation's Web site at http://www.sleepfoundation.org

CHEMICAL USE

There are four chemical tanks numbered 1 thru 4, pumps numbered 1 and 2, power switches numbered 1 and 2, and five valves numbered 1 thru 5.

At the start of each snow shift, the following procedure should be followed to begin a snow shift:

1. Valves #3 and #4 should be locked closed.
2. Valves #2 and #5 should be locked open.
3. Valve #1 will be unlocked and used to fill trucks.

Tank #1 should be used first. The gate valve on tank #1 will be open, and the gate valves for tanks #2, #3, and #4 should be closed. After tank #1 is empty, close the gate valve to tank #1 and open gate valve to tank #2, etc.

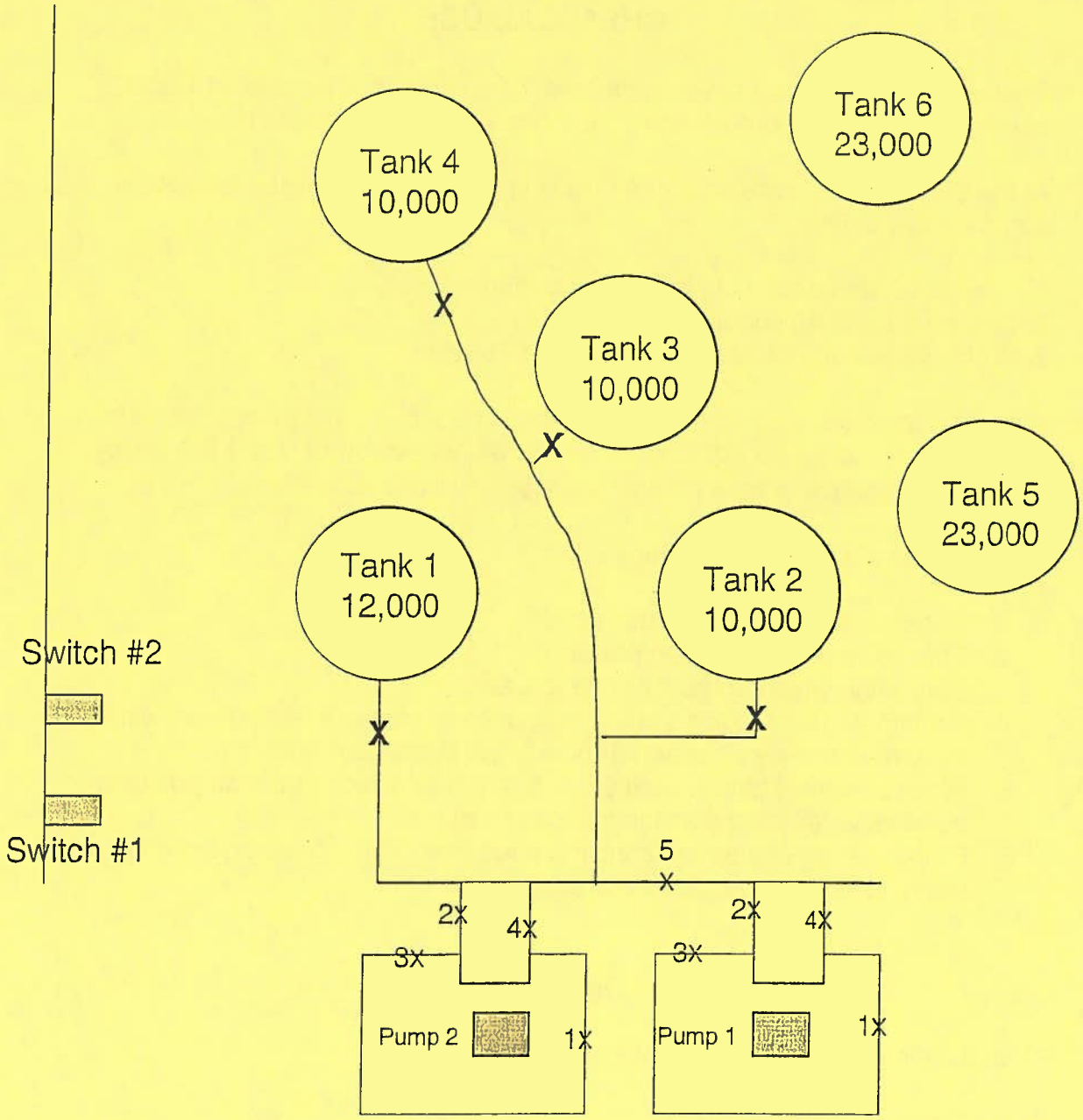
Procedure to fill chemical tank for trucks:

1. Hook up 2" cam lock to truck tank.
2. Turn valve #1 to the open position.
3. Determine which pump #1 or #2 to use.
4. If pump #1 is the pump you have chosen to use, activate power switch #1 by turning the switch marked "hand" and press start button.
5. When chemical tank is nearly full, turn power switch to the off position, close valve #1, and disconnect hose from truck.
6. Proper safety equipment should b used when filling or emptying chemical tanks, including eye protection and gloves.

END OF SNOW SHIFT

Procedure to empty chemical tanks on trucks:

1. Close valves #1 and #2
2. Open valve #3 making sure valve #4 is closed at this time.
3. Hook up 2" hose with 2" camlock to truck tank.
4. Choose which chemical storage tank is the most empty #1 thru #4. Open gate valve to that tank making sure the gate valves are closed to all other storage tanks.
5. Open valve #4 at this time.
6. Determine which pump you have hooked up to, pump #1 or #2.
7. Activate power source switch #1 or #2.



At start of Snow Shift:
Valves #3 & 4 will be locked closed
Valves #2 & 5 will be locked open
Valve #1 will be used to fill trucks

ENVIROTECH

Services, Inc.

P.O. Box 338
Kersey, Colorado 80644
(970) 352-8845

MATERIAL SAFETY DATA SHEET

SECTION I: MATERIAL IDENTIFICATION

Trade Name: **Ice Slicer™**
Product: *Complex Chloride–Sodium Chloride, Potassium Chloride, Magnesium Chloride*
Manufacturer: *Redmond Clay & Salt Co. Inc.*
Address: *6005 North 100 West*
Redmond, UT 84652
Telephone: *801/529-7402*
FAX: *801/529-7486*
Date Prepared: *January 1, 1994*

SECTION II: HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Contains: *Sodium Chloride, Potassium Chloride, Magnesium Chloride*
Threshhold Limit Value (TLV): *NA*
Time Weighted Average (TWA) (OSHA):

1. *Not subject to reporting requirements under SARA, Title III, Sec. 313.*
2. *IARC–None established.*
3. *ACGIH–None established.*

SECTION III: PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: *Solid material, NA*
Vapor Pressure: *Solid material, NA*
Vapor Density: *Solid material, NA*
Evaporation Rate: *NA*
Solubility in Water: *92-99%*
Specific Gravity: *See Bulk Density*
Molecular Weight: *364*
Appearance and Odor: *Reddish to white, no odor.*

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flammable Limits: LEL: *None* UEL: *None*
Extinguishing Media: *None required*
Flash Point: *None*
Special Fire Fighting Procedures: *None*
Unusual Fire and Explosion Hazards: *None*

(over)

SECTION V: REACTIVITY DATA

Stability: *Stable*
Incompatibility: *None*
Hazardous Decomposition or Byproducts: *None*
Hazardous Polymerization: *Will not occur*
Conditions to Avoid: *None established*

SECTION VI: HEALTH HAZARD DATA

Routes of Entry: *Eye contact, skin contact, inhalation, ingestion.*
Effects of Overexposure: *None established*
Emergency and First Aid Procedures:

Eyes--Flush with copious amounts of water.
Skin--Wash with soap and water.
Inhalation--Remove to fresh air.
Ingestion--In case of significant amounts, induce vomiting to purge.

SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: *Sweep up*
Waste Disposal Method: *Dispose in accordance with state or local laws.*
Precautions to be Taken in Handling and Storing: *Store in dry area*
Other Precautions: *None*

SECTION VIII: CONTROL MEASURES

Respiratory Protection:

Ventilation: *None required other than normal*
Local Exhaust: *None*
Mechanical (General): *None*

Protective Gloves: *None required*
Eye Protection: *Minimum--Safety glasses*
Other: *None*

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R135

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME GREAT SALT LAKE MINERALS & CHEMICALS CORPORATION	EMERGENCY TELEPHONE NO. 801-731-3100
ADDRESS (Number, Street, City, State, and ZIP Code) P.O. Box 1190 Ogden, UT 84402	
CHEMICAL NAME AND SYNONYMS Magnesium Chloride Solution (28-32% Basis)	TRADE NAME AND SYNONYMS $MgCl_2$ Brine
CHEMICAL FAMILY Magnesium	FORMULA $MgCl_2$

SECTION II · HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
NONE IN BASIC MATERIAL - Would depend entirely on properties of the		
material the $MgCl_2$ is mixed with by the customer.		

SECTION III · PHYSICAL DATA

BOILING POINT (°F.)	212	SPECIFIC GRAVITY (H_2O=1)	1.32
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (H_2O =1)	1
SOLUBILITY IN WATER	100%		
APPEARANCE AND ODOR			

SECTION IV · FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	FLAMMABLE LIMITS N/A	Lel	Uel

EXTINGUISHING MEDIA
Not flammable

SPECIAL FIRE FIGHTING PROCEDURES
None

UNUSUAL FIRE AND EXPLOSION HAZARDS
N/A

ENVIROTECH

SERVICES, INC.

MATERIAL SAFETY DATA SHEET

SECTION I: MATERIAL IDENTIFICATION

Trade Name: **Caliber M1000 Anti-Icing & De-Icing Agent**

Chemical Name: *Magnesium Chloride Solution*

Manufacturer:	*Glacial Technologies*	*EnviroTech Services, Inc.*
Address:	*901 N HWY 59*	*1140 38th Ave., Suite 1*
	Marshall, MN 56258	*Greeley, CO 80634*
Telephone:	*(800) 858-4861*	*(970) 346-3900*
Date Prepared: *June 20, 2000*		Updated: *January 7, 2002*

SECTION II: HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

None

SECTION III: PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point:	*225 °F*
Vapor Pressure:	*NA*
Vapor Density:	*NA*
Solubility in Water:	*100%*
Specific Gravity:	*1.24 to 1.34*
Melting Point:	*NA*
Evaporation Rate:	*1*
Odor / Appearance:	*Translucent Tan to Dark Brown*
pH as shipped:	*4 - 6*

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flash Point: *NA (Non-flammable)*

Flammable Limits: STP in Air LEL: *NA* UEL: *NA*

Extinguishing Media: *NA (Non-flammable)*

Special Fire Fighting Procedures: *None*

Unusual Fire and Explosion Hazards: *None*

SECTION V: REACTIVITY DATA

Stability: *Stable*

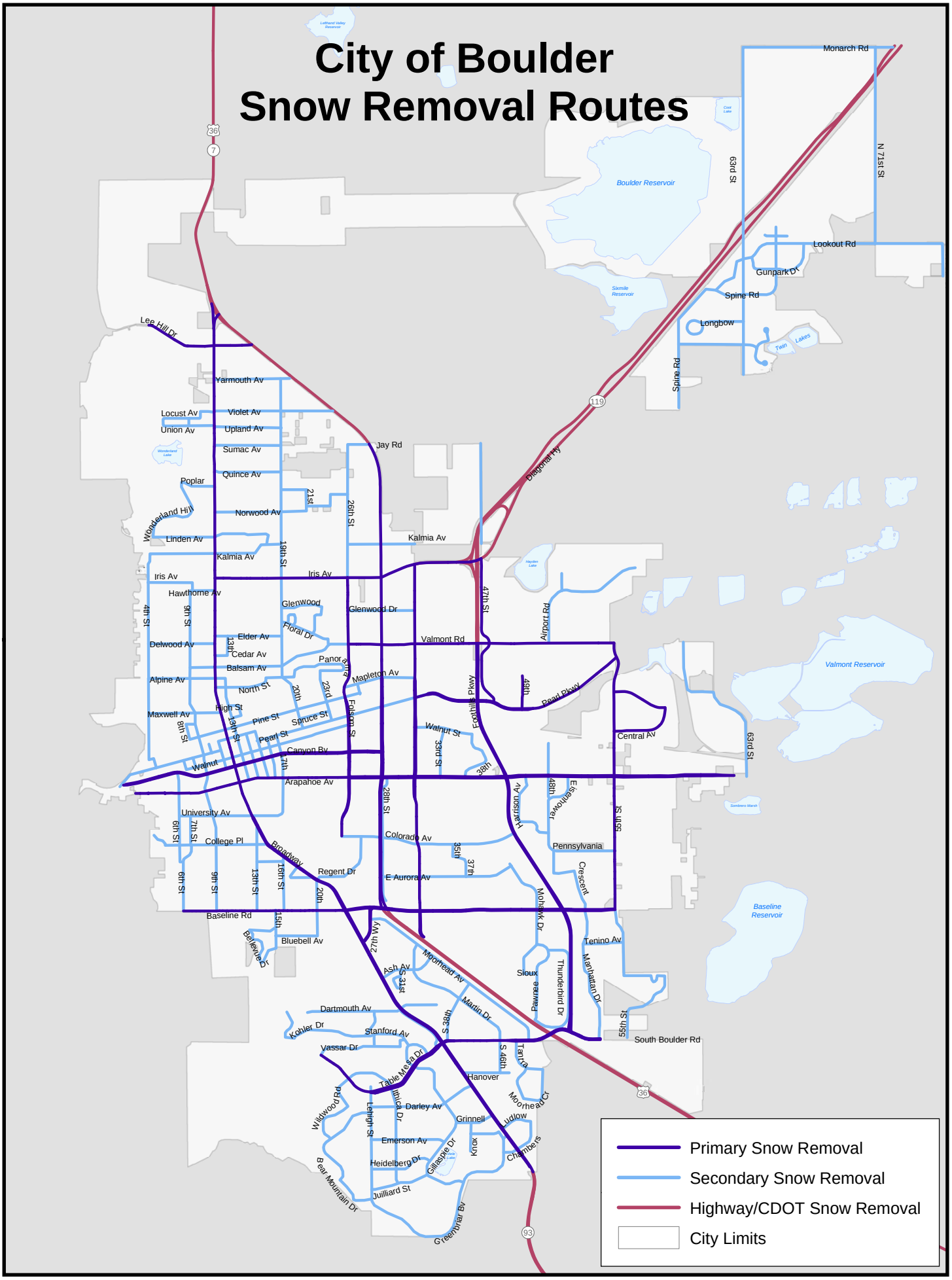
Incompatibility: *None*

Hazardous Decomposition or Byproducts: *None*

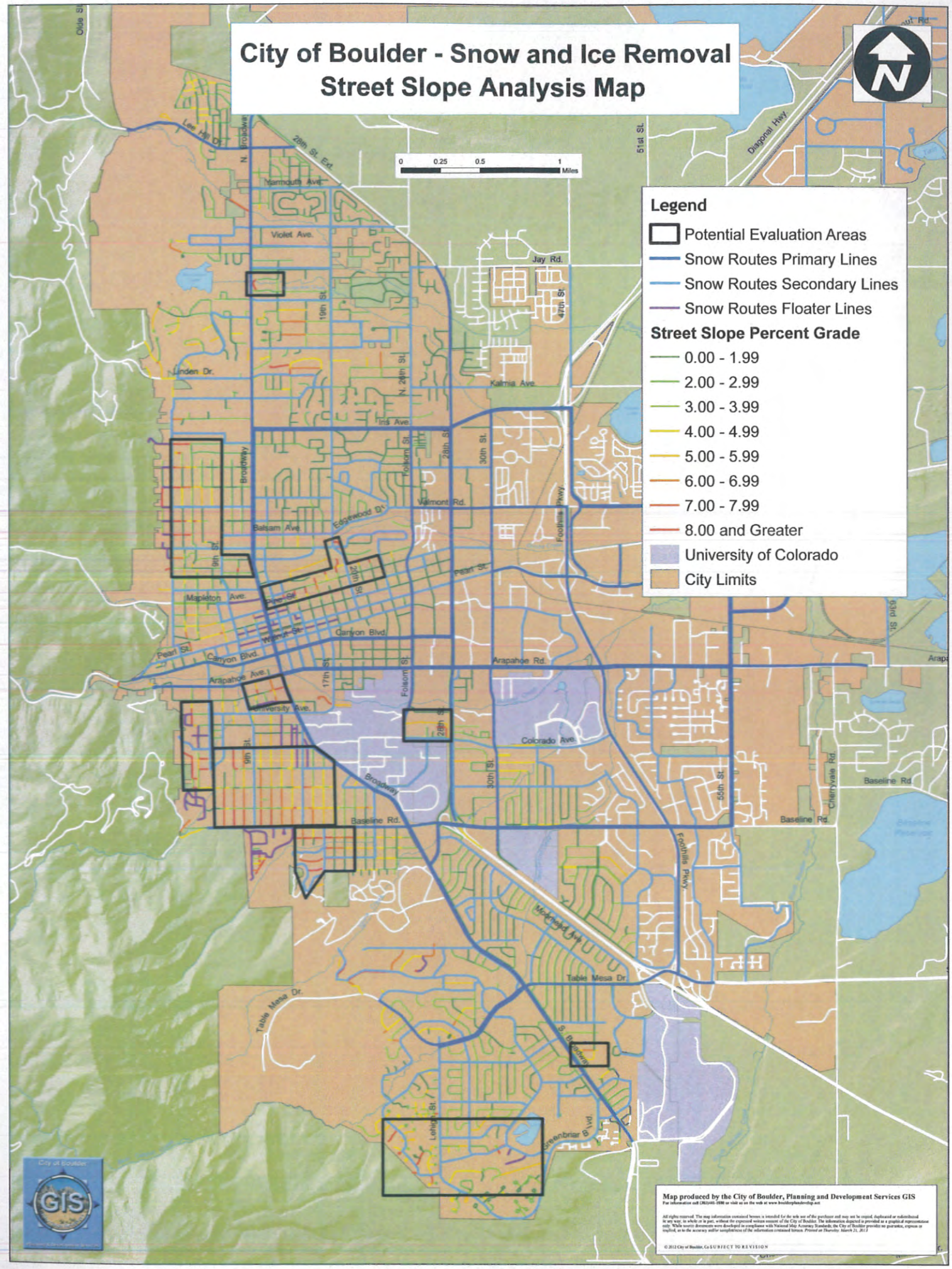
Hazardous Polymerization: *Will Not Occur*

Conditions to Avoid: *None*

City of Boulder
Snow Removal Routes



Residential Road Plowing Pilot Program 2013-2014

- Between Dec. 1 and March 1 only (due to average high and low temperatures and average snowfall amounts).
- Deployed when eight inches or more of snow predicted (does not include any snow pack already on the road surface);
- Forecasted temperatures below freezing (32 degrees Fahrenheit) during the day for the 72 hours after the storm;
- The deployed equipment will make several passes in each direction of identified trouble area streets once all primary and secondary snow routes have been cleared.
- Ice Slicer will be applied at standard approved application rates;
- Any snow that can be plowed off of the road surface will be distributed as equally as possible to both sides of the street. If cars are parked on the street, the snow will be pushed as close as possible to the car in order to open a clear travel lane;
- Crews will not return after this enhanced residential road operation to clear any "plowed in" cars or clear the ends of private driveways that inadvertently have snowed deposited in the area; and
- Once deployed, it is estimated that this operation will take approximately 36 hours to complete (depending on conditions and neighborhood traffic).

City of Boulder - Snow and Ice Removal Street Slope Analysis Map