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### WINTER WORK

- HOW WINTER CAN BE YOUR FRIEND, OR AT LEAST NOT YOUR ENEMY

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- WINTER INSTALLS MEAN MORE CAREFUL PLANNING.
- LIKE WAITING TILL SPRING?

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### WINTER WORK

- A WINTER LIKE THE LAST TWO MAY REQUIRE STAGING IN EQUIPMENT AND WAITING FOR A WEATHER WINDOW IF THE "ACTIVE PATTERN" HITS

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### WINTER WORK

- WINTER WORK ABSOLUTELY REQUIRES RELIABLE EQUIPMENT
- PREP BEFORE MOBILIZATION
  - FUEL FILL, WINTER FUEL
  - ENGINE HEAT
  - CLEAN TRACKS, AT END OF EACH DAY
  - THINK OUT THE JOB!
  - “PLAN YOUR WORK, WORK YOUR PLAN...”

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### WINTER WORK

- HAVE ALL NEEDED SUPPLIES ON HAND...
- LINE EVERYTHING UP...CALL ALL INSPECTORS
  - HOPE THEY CALL BACK

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### WINTER WORK

- SOME ARE PRETTY EASY
- THE FROZEN TOPSOIL CAN BE AN AID

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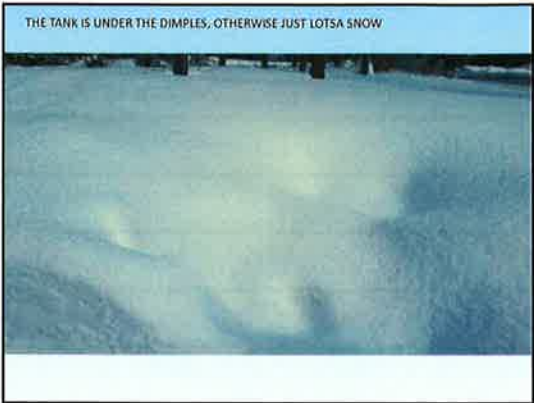
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IF THE GROUND IS FROZEN THE LAWN  
WON'T GET MUCH DAMAGE



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THE APPROACH IS CRITICAL  
HARD FROZEN GROUND CAN HELP



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THE EDA IS UNDER THE CONES  
IT WAS A BIT SOFT WHEN SNOW WAS CLEARED  
AND WAS GREEN



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I BEGIN TO LOCATE THE EDA



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READY FOR THE NEXT DAY TO REPLACE



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**WINTER WORK**

- KEEPING THE MACHINE IN ONE PLACE CAN BE A CHALLENGE

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REMOVE THE OLD UNITS, LEAVE A  
LOOSE SURFACE, PLACE SYSTEM SAND



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LEVEL THE SAND, PLACE THE UNITS AND COVER  
FABRIC, PLACE A BIT OF SAND...FOUR HOURS



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### WINTER WORK

- THEN CALL FOR INSPECTION
- THIS WAS AN IN-KIND-AN e-APPROVAL
- INSPECTION BY E-REQUEST
- ALL DOCUMENTS (OLD PLAN, OPERATIONAL APPROVAL, EXISTING CONDITIONS SKETCH) MUST BE UPLOADED BY DESIGNER BEFORE REQUEST MAY PROCEED

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### WINTER WORK

- **BUT OPERATIONAL APPROVAL APPEARS ON YOUR DEVICE IMMEDIATELY WHEN INSPECTOR OKAYS IT**
- **WHAT ABOUT THOSE WHO DON'T HAVE A DEVICE?**
- NOT SURE, ROB'S NUMBER IS...271-2904

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DUMP A BIT OF TOPSOIL (IF YOU CAN GET INTO IT) AND ROUGH IT OUT, WAIT FOR APRIL...



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### WINTER WORK

- NOT MUCH CLEANUP, A FEW NICK IN THE TURF, NO WHEEL RUTS

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### WINTER WORK

- SOME JOBS OFFER MORE CHALLENGES
- THIS 2014 IN-KIND HAD A WAIT FOR STATE OK BECAUSE OF A MIX-UP WITH THE PAPERWORK...LOCAL APPROVAL THRU ROCKINGHAM COUNTY
- A 72 FOOT LONG TWO-ROW INFILTRATOR EDA
- BURIED TWO FEET ON THE APPROACH EBND AND FIVE FEET ON THE FAR END

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### WINTER WORK

- AND LOTS OF SNOW, WITH ICE BELOW, ON A SLOPING FRONT YARD
- TEST PIT IN JANUARY, THE A MONTH WAIT FOR THAT WEATHER WINDOW
- STAGED WITH DEERE 160, STEEL PLATES AND MATS, AND SOME TOPSOIL
- THEN MORE SNOW...LOST THE WEATHER WINDOW

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PLACED THE TOPSOIL SO THE MACHINE SAT ON THE LOAM PAD



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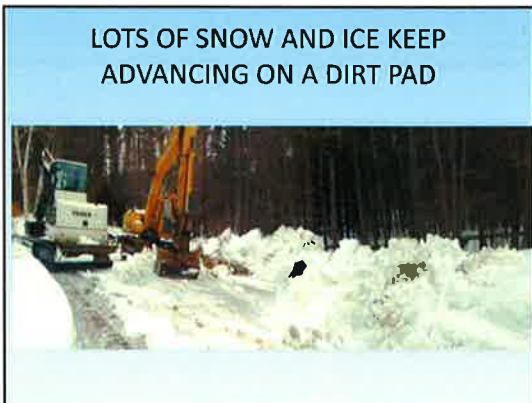
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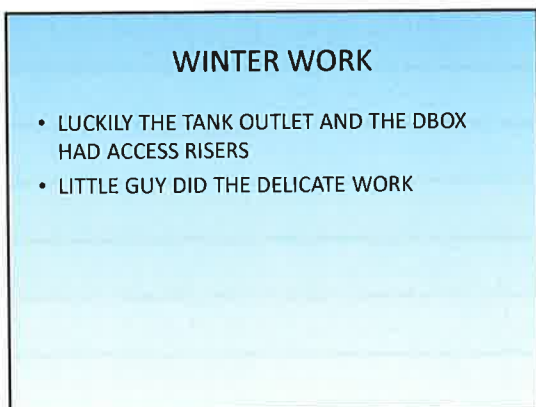
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**WINTER WORK-RIVIERA MOTEL**

- SOME WINTER WORK IS FAR MORE CHALLENGING
- 2009 SAW DEEP COLD BUT NOT SO MUCH SNOW-THANKFULLY
- MID JANUARY BEGINNING OF A MOTEL SYSTEM CHALLENGED US CONSIDERABLY

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**WINTER WORK**

- TWO 40'X50' STONE BEDS
- EIGHT TANKS
- LIMITED ACCESS TO THE TANK AREA
- PLAN YOUR WORK
- PRAY FOR NO SNOW!

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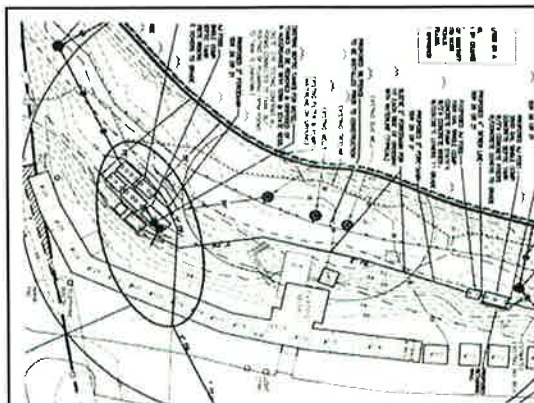
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A CHANCE OBSERVATION IN AUGUST 2008 BY A RIVER WATCHER FOUND THIS-RIVER IS JUST BELOW-STANDS OUT MUCH MORE IN WINTER



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WINTER WORK



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**WINTER WORK**

- SOME MONTHS OF DESIGN BY PENNY WRIGHT WITH ENGINEERING OVERSIGHT BY CHRISTIAN SMITH
- CLEAN SOLUTION SYSTEM
- 5500 GPD
- LOTS OF TANKS

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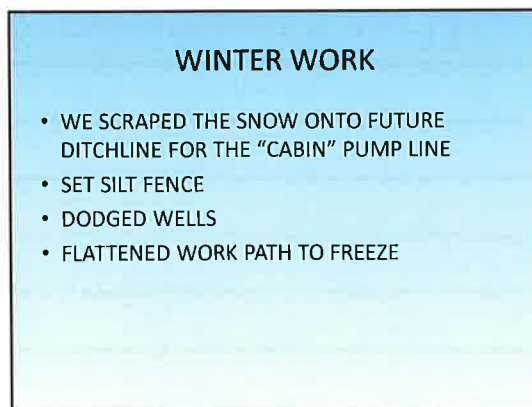
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**JANUARY 10 2009-SILT FENCE  
BELOW ZERO, WINDY**



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**WELLS BY STAKES, RIVER TO RIGHT**



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**I NOW FAVOR EROSION CONTROL MIX  
AKA STUMP CHIPS**



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**THEN ON TO THE STONE BEDS**



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**THE MIGHTY RIPPER**



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**AFTER TREE REMOVAL A DAY'S WORTH  
OF RIPPING FROST**



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**LEFT A LOOSE SURFACE WITH STILL  
SOME CHUNKS-SAND STAGED IN FOR  
SPREAD AFTER INSPECTION**



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**CHRISTIAN SMITH THE HAPPY  
ENGINEER**



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**WASHED SAND IS PLACES AND MIXED  
INTO THE RIPPED RECEIVING SOIL**



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**LEVELED WITH EXCAVATOR AND LASER**



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**BIG D-BOX SET**



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**INSTALL FORCE MAINS**



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**FORCE MAINS SLOPED TO PROVIDE DRAINBACK**



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**SDR PIPE BEDDED WITH SAND**



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**FEED PIPES**



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**DAY TWO OF BED BUILD  
FUTURE VENT PIPE AT STAKE**



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**JAY AND OTHER INSPECTORS RIGHT  
ON TIME-SNOW IS COMING**



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**COVER STONE WITH LASER GUIDANCE  
FOR UNIFORM DEPTH AND TO BEAT  
12" SNOWSTORM THAT NIGHT**



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### WINTER WORK

- THEN ON TO THE TANK FARM.
- BY NOW THE ACCESS IS WELL FROZEN
- TANKS FROM PHOENIX ARE READY
- FIRST LOCATE OLD SYSTEM COMPONENTS
- PUMP AND REMOVE

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### EXISTING 1000



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### OLD DRY WELL- FIRST OF TWO



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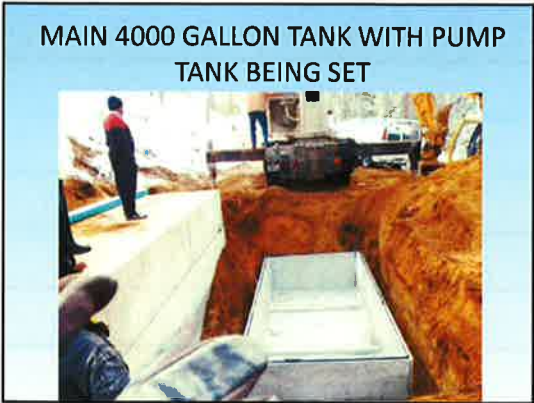
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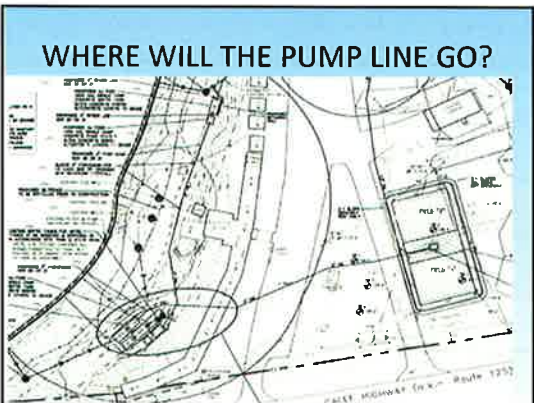
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### WINTER WORK

- BUILDINGS WALL TO WALL
- NO BASEMENT EXCEPT IN THE CENTER PART
- FROZEN GROUND AND PAVED AREAS
- SOLUTION: DIRECTIONAL BORING-EXPENSIVE BUT QUICK AND PRODUCED LITTLE DISRUPTION
- NEED A "WARM" DAY

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### ABOVE FREEZING- FEB 2-ETTI ARRIVES



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### WAITING FOR BORE IN "LAUNCH" PIT NEAR BED CORNER



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LOCATING BORING BY MOTEL FRONT-  
MAX DEPTH 18 FEET



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DUG A SMALL RECEIVING PIT ABOVE  
TANK AREA



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FIRST SIGN OF BORE



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**BORE COMES THRU**



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**AFTER ETTI PULLED IN A 200 PSI 2" LINE A SWEEP AND TRUST BLOCK CONNECTION WAS MADE**



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**2" SDR CONNECTION TO PUMP TANK, PLUS TRACER LINE-UNDER SEWER LINES**



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FIRST THREE TANKS



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STEPPED TANKS REQUIRED RETAINING WALLS



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TANK AND RETAINING WALL CONSTRUCTION-STILL THREE MORE TANKS TO GO



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AFTER THE 3 BIOCON TANKS WERE SET, THE FIRST TANK FARM AREA IS NEARLY DONE-LOTSA RISERS



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WORKING ON THE TWO "CABIN" TANKS



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**WINTER WORK**

- TANK AND PUMP STATION FOR CABINS
- PUMP LINE CROSSED UNKNOWN WATER LINE IN INSULATED SLEEVE
- POWER WAS TO COME FROM WELL HOUSE BUT FEED TO WELL WAS INADEQUATE
- NEW POWER FROM MOTEL MAIN PANEL
- THEN A BREAK

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**WINTER WORK**

- APRIL SAW ONE MORE TANK AND PUMP LINE FOR THE SEPARATE HOME
- HAD TO CROSS ANOTHER BIT OF PAVEMENT

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WASHING IN STEEL SLEEVE



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STEEL SLEEVE AND PIPE



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WINTER WORK

- THANKS!!!

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WINTER WORK

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WINTER WORK

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