

# Concerns about the drainage proposal as outlined in <sup>3W</sup> “Hydrological Assessment for Flood Control Planning & Environmental Impact Assessment”

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## Introduction

We own a cottage on fifteen acres on the shore of Salt Lake (also referred to as South Salt Lake) and have a serious and growing concern about a proposal submitted to Water Stewardship by the Rural Municipality (RM) of Strathclair (spring 2008) to drain an extremely large volume of water from Middle Salt Lake (also referred to as Center Salt Lake) and North Salt Lake into Salt Lake. We are long-term seasonal residents of the Salt Lake area. Vicki's father and grandparents were permanent residents of Strathclair and the land we own was purchased in the 1930s. We are not outsiders who wish to interfere with accepted agricultural practices or wise land use. Many Salt Lake families, like ours, are third and fourth generation residents of the area and virtually all are strongly opposed to the proposed drainage until it can be demonstrated that the drainage will not degrade Salt Lake from the environmental and recreational use perspectives.

Our comments and views, which are shared by the seven other cottage owners situated on our property and most other property owners around the lake, will be presented in two sections. The first presents our concerns about any drainage from Center Salt Lake into Salt Lake and the second provides page by page comments supporting our concerns.

## Concerns

### Hydrological Assessment for Flood Control Planning

In addition to our strong feelings that human activities should be managed to minimize negative impacts on the environment, we have two specific concerns:

1. maintaining the highest possible water quality at Salt Lake
2. managing Salt Lake water levels to prevent degradation of the local flora and fauna, to minimize shoreline erosion and to ensure continuation of high quality recreational activities which are currently enjoyed on Salt Lake

After reviewing the “Hydrological Assessment for Flood Control Planning & Environmental Impact Assessment”, we are not persuaded that the proposed drainage project will be conducted in a way that addresses these two concerns. The consultant immediately reaches the conclusion that drainage is necessary, that the drainage must pass through Salt Lake, and that there are no or negligible resulting implications. This is done without

analyzing any data or information and without providing any references to scientific studies when he provides his opinions on environmental and social impacts.

Over the past three summers, Salt Lake has been subjected to historically high water levels worsened by drainage effected by the RM as an “emergency measure”. In addition, the quality of Salt Lake appears to have been degraded. From our observations Salt Lake has been more turbid. Also, recreational and agricultural interests have been significantly affected because high water has flooded cottages at the south end, inundated all beaches, and caused serious shoreline erosion at cottage sites and agricultural lands.

The consultant discusses why Salt Lake water levels have risen to flood stage. He attributes most of it to the flow of water from Center Salt Lake which he claims was “inevitable”. I suppose he means that even without an engineered drain, water would flow into Salt Lake from Center Salt Lake anyway. In fact, in 2009 and 2010 no water would have flowed from Center Salt Lake without the excavated drains installed by the RM as “emergency measures”. The 2010 drain was significantly eroded and as a result, there was insufficient earth available to fill and pack the drain “shoulder to shoulder” in the fall 2010. The water flow into Salt Lake in 2011 occurred because the 2010 drain was not properly filled in as ordered by Water Stewardship and this flow has continued until October. This contributed greatly to extreme flooding of beaches, cottages and agricultural property around Salt Lake and caused serious shoreline erosion. The problems of excessive water in Salt Lake was exacerbated because the single outlet culvert was apparently improperly installed by the RM in 2010 and inadequate in diameter (30 inch instead of the required 36 inch).

The consultant does not address one of the main causes of the high water which has concentrated in the Salt Lakes complex. Excessive drainage of wetlands on private land north and east contributes significantly to the high water in all three lakes, but solutions to this activity are barely touched on. The consultant does not seem to acknowledge that over 90% of drainage from private land is unlicensed (Broughton Creek study, 2010). Closing at least some of these illegal drains certainly should be an option. Historically, the solution to high water is to pass it downstream by creating more drains, and this is exactly what the consultant recommends.

After minimal or no formal analysis of information and data, the consultant concludes that draining Center Salt Lake is the solution, and, furthermore, the best route happens to be into Salt Lake which is “coincidentally” exactly what the RM has been striving to do over the past several years. Inexplicably, under the heading Nip Creek, the consultant outlines his “strategy”. He leaps to the conclusion that “the best case solution forms around turning North and especially Center Salt Lake into a connected reservoir to regulate releases...”. Such a conclusion would normally follow from a detailed presentation of data and a comprehensive analysis and discussion of the data. We don’t see the supporting data anywhere in the report.

The list of drainage options from Center Salt Lake were evaluated in a superficial way. We believe that the discussion provided is inadequate to draw the conclusion that the route must pass through Salt Lake. The excuse for rejecting all options that circumvent Salt Lake is mainly that it would be too costly to “consider reasonable for funding as a project by

a Rural Municipality". This is an interesting conclusion since it is apparently based on absolutely no cost analysis. There is not even a hint provided as to possible cost differentials. Is the cost of the routes that bypass Salt Lake \$10,000 or \$100,000 more. We do not know and the consultant seemingly does not know either. Therefore, the conclusion drawn here seems to be based on his intuition or some other factor that is not apparent. The consultant also uses the rationale that Route 10 would result in a "major hazard in the form of a deep, roadside trench". There are steep slopes by hundreds of roads and highways across Manitoba. Is there a particular guideline or bylaw in the RM of Strathclair the bans a deep ditch adjacent to this road? The consultant also states the some of the options "would be a nuisance to agricultural practices". It seems that he would prefer to potentially degrade Salt Lake rather than cause a nuisance to farming on a 1/4 section of agricultural land.

There may be a host of alternative drainage procedures that have not been considered. For example flexible large diameter pipe and a high capacity pump system has been used elsewhere to move water over high points rather than excavating deep trenches. Consideration should be given to this method to move Center Salt Lake water over the high points to the drainage run west of Salt Lake (Route 10). Since, the Salt Lake's high water problem may be short-lived, perhaps a more temporary measure is all that is required.

The consultant's findings do not in any way lessen our concerns that a drain from Center Salt Lake will damage the Salt Lake ecosystem and the activities that are currently enjoyed on the lake. However, if the drainage project is approved for some incomprehensible reason, then a clearly defined and mandatory Salt Lake water management plan must form an integral part of the project.

Until Salt Lake was been subjected to additional water from Center Salt Lake there were few problems with high water because Salt Lake always had a historical outlet. Prior to road development there was absolutely no barrier or constriction to flow from Salt Lake to the south west. The lake flowed freely into a marsh complex and then on to the Oak River. When the road that borders the western side of Salt Lake was first constructed, a bridge still allowed for the free flow of water to the southwest marsh complex. The bridge was replaced by a culvert in the late 1950s which has somewhat constricted outflow from Salt Lake.

The consultant provides a mandatory management plan for water levels in Center Salt Lake and North Salt Lake. Exact levels that are to be achieved in Center Salt Lake and North Salt Lake are stipulated. In addition, an extensive engineering project including dredging, new culverts, excavated drains, and control structures are all recommended in detail. However, there is no management strategy for Salt Lake. All this additional water is to enter Salt Lake but the consultant seems to think that a 36 inch culvert that was required without additional water will suffice. This is wrong.

The consultant's cryptic management plan for Salt Lake states that "Salt Lake will not be reduced in volume or depth...". In fact, Salt Lake level should be lowered because it is flooding, even though the existing culvert is not currently flowing. Installation of an adequate outlet control structure at the proper elevation must be installed to regulate Salt

Lake at a lower ideal level, whether or not the proposed drainage from Center Salt Lake is approved.

The consultant does not discuss appropriate levels for Salt Lake, or recommend measures to ensure that Salt Lake does not flood as it did in 2010 and worse yet in 2011. He merely states that releases from the “reservoirs” would occur only after flows have peaked in the Oak River system and that the “water flows would be regulated to match flows allowed by the Oak River watershed sections and prevent excessive water elevations in South Salt Lake”. This is an ill-thought-out criterion for allowing flow from Center Salt Lake. Even when there is near-zero flow in the upper Oak River system, Salt Lake and portions of private land southwest of the lake could still be flooded (as is currently the case - October 2011). Also, because the Salt Lake outlet culvert is inadequate (as noted above), additional water to Salt Lake will result in worse flooding along the lakeshore. The best he can do is “prevent excessive water elevations”. Excessive is not defined, yet he is quite specific when he discusses acceptable water levels in Center and North Salt Lakes. This strategy is inadequate and unacceptable.

We agree that levels in the upper Oak River system (perhaps using the “Riley culvert as an indicator” would be one aspect of this) must be considered prior to a release from Center Salt Lake, but the level of Salt Lake must also be a primary consideration. The water management guidelines for Salt Lake must be the following:

- water shall not be released from Center Salt Lake unless Salt Lake is at or near a prescribed ideal level (the ideal Salt Lake level must be set 0.5 to 0.75 meters below the October 2011 level (i.e. the bottom of the existing outlet culvert))
- a maximum allowable level must be established at or below the October 2011 level (i.e. the bottom of the existing outlet culvert). Salt Lake may only rise to this level for a short period of time
- proper outlet control structures must be installed at the southwest end of the Salt Lake, to manage lake levels; the bottom of the new Salt Lake outlet control structures must be set at least 0.5 to 0.75 meters below the bottom level of the existing culvert so Salt Lake level can be reduced to its ideal level (this provision should be undertaken whether or not the proposed drain from Center Salt Lake is installed)
- the capacity of the Salt Lake outlet control structures must be sufficient to prevent the level of Salt Lake from increasing as additional water is introduced from Center Salt Lake (i.e. exiting water volume must equal or exceed entering water volume)
- a dredged underwater ditch must be excavated to allow efficient flow from Salt Lake through its outlet control structure (a shoreline sand bar and vegetation debris often impedes water flow into the existing outlet culvert); this underwater ditch would be similar to a dredged underwater ditch as recommended by the consultant from the deep part of Center Salt Lake to the culvert at Road 94N.

The Salt Lake outlet control structure must be the first upgrade undertaken under this program so that Salt 's ideal level can be achieved prior to releasing any water from Center Salt .

## Environmental Impact Assessment

The consultant concludes that “concerns over the ‘polluting’ of the south lake are unfounded”. It unclear how the consultant arrived at this conclusion since there is no evidence or analysis anywhere in this report that shows that introducing water from Center and North Salt Lakes will not degrade the water quality of Salt Lake.. The consultant’s assessment of the the water sample data did not appear to be based on conventional scientific analysis. It would be interesting to know his academic training and source of expertise in water quality assessment.

The only valid analysis we have seen was prepared by a senior scientist from the Water Science and Management Branch (Water Stewardship) with specific expertise in the area of surface water quality. The scientist prepared a preliminary report on the water samples taken from the Salt Lakes in 2007 and 2009 (copy was submitted to the RM in 2009). The scientist made the following observations.

- The water is Saltier and generally of a poorer quality in Middle Salt Lake compared to Salt Lake.
- Total dissolved solids concentrations and conductivity were about double in Middle Salt Lake compared to Salt Lake. Total dissolved solids is a measure of the filterable Salts and minerals in a water sample. High total dissolved solids concentrations usually result in poor taste and may, if high enough, become a health concern.
- Concentrations of sodium and sulphate were about twice as high as in Middle Salt Lake compared to Salt Lake.
- For variables such as chloride, magnesium and phosphorus, concentrations in Middle Salt Lake were about twice as high as those in Salt Lake. High levels of chloride can affect sensitive aquatic plants. High levels of phosphorus can result in excessive algae growth and aquatic plant growth.
- The measure taken of algae biomass (chlorophyll *a*) indicated that concentrations of algae were higher in Middle Salt Lake compared to Salt Lake.

The scientist indicated that there was considerable annual and/or seasonal variability in Middle Salt Lake and Salt Lake. Concentrations of dissolved solids, calcium, sodium, magnesium, chloride, and sulphate were two to almost five times higher in July 2007 as compared to April 2009. The following conclusions were made.

- Salt Lake had better quality of water that either Middle or North Salt Lake.
- More information on water quality in these three lakes is required to assess potential impacts of water diversion from North or Middle Salt Lakes to Salt Lake. This would include a seasonal monitoring program in the spring, summer, fall and winter. Given the differences in water quality between the three lakes, potential affects of water diversion could include impacts on the aquatic community, recreation, and the use of Salt Lake water for drinking, livestock watering or irrigation/garden watering.

Regarding this final conclusion, note that there could be a impact to recreational use and livestock watering on Salt Lake due to the introduction of water from Middle Salt Lake. Both activities occur on Salt Lake. There are no recreational activities on Middle or North Salt Lake.

The consultant provides the raw data from 2011 water samples but provides no discussion of the results or conclusions based on the data. The consultant's only conclusion is that the water is "free of contaminants". How he arrives at this conclusion is unknown since almost all parameters are different between Salt Lake and Center and North Salt Lakes - in many instances by a factor of 2 or more. He indicates that no indicators were found in the water samples to suggest any "strong sources of pollution, pesticides or otherwise". Since there is no evidence of data analysis, it seems we are to take his word that there is nothing of concern. What does "strong sources of pollution" mean? He should have discussed the various parameters in terms of the Manitoba Water Quality Guidelines and Objectives. Also, the implications of the level for each parameter should be outlined.

The water samples presented in this report were taken in April when the water in Center Salt Lake was greatly diluted. We are concerned that if the intent is to draw Center Salt Lake down to a level where there is virtually no water, then how will the water quality change as the impact of dilution becomes less of a factor?

The consultant neglects to mention that the license for the water treatment lagoons stipulates that outflow from the lagoons shall not flow to Salt Lake. The consultant brushes this issue aside by opining that the effluent is "of small consequence". He apparently does not know that effluent from the lagoons cannot be directed to Salt Lake. Since the consultant has clearly stated that the Center and North Salt Lake complex is all interconnected during high water, opening a drain from Center Salt Lake to Salt Lake will result in effluent from the lagoon reaching Salt Lake. That contravenes the provisions of the license.

The consultant provides an unsophisticated listing of various observations concerning plants, animals and swimmer's itch. The relevance of this is unclear since there is no analysis or discussion about the implications of the information.

The consultant states that the long-term effects on the upper Oak River watershed should be monitored over the first decade of the program. We believe that monitoring the impact on Salt Lake should also be a priority.

Some of the points raised by the consultant seem to indicate an odd attitude toward the concerns of those not in favour of the drain into Salt Lake. Comments like these may demonstrate a level of bias against the interests of those concerned about the integrity of the Salt Lake ecosystem. Some examples include:

- The consultant uses phrase "more fresh water is 'flushed' through the system" (meaning Salt Lake). Almost all parameters measured in Center Salt Lake have concentrations from 2x to 10x higher than Salt Lake. That is not fresh water - that is water of poorer quality.
- The consultant states the land fill has been a source of "virulent rhetoric". This is a condescending statement, suggesting that comments by those opposed were vindictive

or malicious. This is an unfair characterization of the comments expressed to the RM which were in fact based on a sincere concern about the quality of Salt Lake. That is not rhetoric and it was not virulent.

- The consultant states that samples were taken by the old landfill because local people claimed there was pesticide residue “supposedly” leaking through the soil. Local people requested that a qualified scientist undertake an analysis to allay concerns about this potential source of pollution.
- What is the relevance of referring to two local rate payers as “squatters” when they have permission from the landowner to use the site.
- Para 4, page 21 is condescending when the consultant states that “these are the very folks opposed to the control structure and trench.” That does not make us bad or wrong. Some local residents have opposed the drainage because there is no certainty that the water would not degrade the quality of Salt Lake and because there was no confidence that the drainage would be conducted in a professional manner.

In conclusion, the Environmental Impact Assessment provides no evidence that the quality of Salt Lake water will not be degraded by the proposed drainage. The conclusions seem to be largely the expressed opinion of the consultant based on cursory observations. The consultant did not support his opinions with data analysis or any reference to scientific research conducted in this field of study.

It seems that actions such as Phase 2 and other actions to stop unlicensed drainage from private land should be done before this drainage proposal is considered.

The Hydrological Assessment for Flood Control Planning attempts to address high water levels of Center Salt Lake and North Salt Lake and indicates a concern about water levels and flows through the upper Oak River system but does not provide any evidence that the risks of flooding in Salt Lake will be addressed. The report largely ignores the need to manage the level of Salt Lake.

The consultant proposes that the RM should consult Water Stewardship and the RM of Blanshard “before commencing any releases of water” from Center Salt Lake into Salt Lake. It is our understanding that, if a license is granted for this drainage project, there would be no requirement to do this. We would have to rely on the integrity of the RM to release water only when the flow will not result in downstream catastrophes. Based on the past record of the RM, we have no confidence that the drainage will be conducted in a professional manner. The RM released water at the Salt Lake outlet in 2010 by breaching the road. No landowners downstream nor the RM of Blanshard were notified in advance - water left the lake in a torrent causing land to be flooded. One rancher that we know of almost lost calves to drowning. The RM has also ignored Water Stewardship regulations by installing drains without a license. The only way this ill-advised drain could be properly managed is if it is handled entirely by Water Stewardship.

We are very concerned that if the Center Salt Lake drain is installed then it will be a green light to undertake more drainage into the Salt Lakes from the north and east.