
Official re-survey of Fort McMurray

Effect of the 2016 wildfire on the
survey fabric



Official Re-Survey of Fort McMurray | Alberta Environment and Parks

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Introduction

This purpose of this document is to describe the work undertaken by Alberta Environment and Parks to complete an official re-survey of Fort McMurray.

Wildfire information

On May 1, 2016, a wildfire began southwest of Fort McMurray, Alberta, Canada. On May 3, it swept through the community, forcing the largest wildfire evacuation in Alberta's history, with upwards of 88,000 people forced from their homes.

The wildfires destroyed whole neighbourhoods, in some instances only one or two structures within the neighbourhood, while leaving others untouched. This destruction also included multiple occupancy dwellings such as condominiums, apartments, and more. Early estimates stated over 3,000 structures were destroyed.

One year later the actual numbers were 1,595 buildings and structures destroyed in the fire. Part of the buildings included condominiums, apartments, townhomes, and more, which totaled 2,579 multiple occupancy units.

Re-building affected areas

The fires were not the major cause of damage to the survey fabric. The use of heavy machinery to fight the fire, clear the rubble and remove debris and toxic materials was the major cause of disturbance and destruction to the survey monuments.

Estimates provided by the Planning and Development Department of the Regional Municipality of Wood Buffalo (RMWB) placed the count to be 1679 affected parcels.

Subsequent to the fire, as soon as permits were issued, rebuilding was allowed, and homeowners started to re-build. This meant that people did not, and in most cases could not, wait until the legislated process of an official re-survey was completed to define their boundaries. They wanted to restore their homes and return to a life that was as close as possible to what it was before the fire. In fact, by the time the actual re-survey had even begun approximately 400 building permits had already been issued.

This was a concern for the Director of Surveys as it was not known how many of the rebuilds started had obtained the professional services of an Alberta Land Surveyor (ALS) to determine their parcel boundaries. It was known some building contractors/companies, were doing their own layout without the proper authority or training to do so, meaning the risk that buildings would be placed incorrectly within their parcels was very real and even likely.

An additional concern was that even for those property owners that hired a licenced ALS to lay out their buildings, the surveyors themselves were at risk of not agreeing with each other as to where common boundaries might be since much of the local monumentation would have been destroyed and they would have to search much farther off site to find any remaining evidence to use as a starting point. The further out you have to go, the more likely you are to come up with something different from another surveyor. This is magnified when the different surveyors go far off site in different directions searching for a sound starting point. If surveyors weren't communicating well with each other, one could expect problems. This would ensure the building being constructed was in abeyance with municipal bylaws and within their parcel. This concern was considered and contingencies developed during the re-survey process.

Official re-survey

The legislated re-survey used in Fort McMurray is found under s.48 of the *Surveys Act*. Section 48 then refers to s.39 to s.43.

Re-survey of s45 land in municipality

48(1) The council of a municipality may, on the application of 50% of the registered owners of the land to be affected, or without an application, pass a resolution that it is desirable to re-survey and place monuments at the corners of parcels the boundary lines of which were established pursuant to section 45.

(2) Sections 39(2) to (6), 40(1), (2) and (4), 41, 42 and 43 apply to a re-survey under this section.

Re-survey of s29 or 32 land in municipality

39(2) On receipt of a resolution under subsection (1), the Minister may direct the Director or a surveyor appointed by the Director to re-survey the land in question and to place monuments of a style approved by the Minister for that purpose at the corners of the land.

(3) Before beginning the re-survey, the Director shall publish notice of it in one issue of *The Alberta Gazette* and once each week for 2 consecutive weeks in a newspaper that circulates in the neighbourhood of the land to be re-surveyed.

(4) Any person

- (a) who claims to know the position of any of the survey monuments defining the land to be re-surveyed, or
- (b) who claims to be in possession of information whereby the position of monuments can be established,

may, before the commencement of the re-survey, notify the Minister by registered mail of the information in that person's possession regarding the matters referred to in clauses (a) and (b).

(5) Before re-establishing a monument with respect to which notice has been given, the Director or a surveyor appointed by the Director shall, by registered letter or personal service, request the person who has given the notice under subsection (4) to appear before the Director at a time and place specified to show the position of the monument or to produce the evidence in the person's possession with regard to it.

(6) The Director, or a surveyor appointed by the Director, shall

- (a) commence the re-survey in accordance with this Act not less than 2 weeks after the last publication of the notice under subsection (3),
- (b) place monuments to mark the corners of the re-surveyed land, and
- (c) submit a plan and other records respecting the re-survey to the Minister.

Confirmation of re-survey

40(1) On receipt of the plan and other records under section 39(6), the Minister

- (a) shall publish notice of it in one issue of *The Alberta Gazette* and once each week for 2 consecutive weeks in a newspaper that circulates in the neighbourhood of the land re-surveyed, and
- (b) shall specify in the notice a day, not less than 2 weeks from the date of the last publication of the notice, on which the plan and other records will be considered and the parties affected by it may be heard.

(2) After the hearing under subsection (1), the Minister may either confirm the re-survey or direct that any amendments or corrections that the Minister considers necessary be made, and shall confirm the re-survey as amended or corrected.

(4) The monuments established by the re-survey mark the boundary lines of the land re-surveyed for all purposes.

No review of re-survey

41 The order of the Minister confirming the re-survey is final and conclusive and shall not be questioned in any court, whether or not the monuments marking the original survey are subsequently found or their positions proved by other evidence.

Filing of re-survey

42(1) The Director shall, forthwith after the confirmation under section 40(2), file one copy of the official plan of the re-survey with the Registrar.

(2) On receipt of the official plan of the re-survey, the Registrar may make corrections to the certificates of title or registers to reflect any changes effected by the re-survey.

Payment for re-survey

43(1) All expenses for a re-survey shall be paid to the Minister by the municipality on whose resolution the re-survey was made, on receipt of an invoice from the Minister, which may be issued from time to time during the progress of the re-survey.

(2) The municipality on whose resolution the re-survey was made may pay the expenses out of the general funds of the municipality either in whole or in part, as it considers proper.

(3) If the municipality pays only a part of the expenses out of general funds, it may order that the remainder be placed on the tax roll as an additional tax against the property affected by the re-survey, in proportion to the assessed value of the property as shown on the last assessment roll and that amount shall be collected in the same manner as taxes on land.

Timeline of Re-Survey Process

Request of a re-survey by Regional Municipality of Wood Buffalo (RMWB)

On June 21, 2016, the Wood Buffalo Recovery Committee (WBRC) was created and approved by Council to provide policy and governance oversight of the community's recovery from the wildfire.

The Wood Buffalo Recovery Task Force (WBRTF or Task Force) was created by the Mayor and Council. Its mandate was to consult and work with all appropriate stakeholders to decide upon and execute measures to ensure that the Municipality and its residents would be well established on a path to recovery.

The Director of Surveys was contacted by members of the RMWB, some who were part of the WBRTF, on November 25, 2016. This initial telephone call led to a second conference call on November 28, 2016. It was during this call that the Director of Surveys was made aware of potential survey related issues resulting from the destruction of survey monumentation. It was understood that some of these issues and concerns were brought to the attention of the RMWB by local ALS'. The Director of Surveys solicited opinions and feedback from local ALS' a week after the initial contact by the RMWB.

The Director of Surveys suggested there were two possible solutions to restore the survey fabric.

1. Parcel boundaries along with survey monumentation could be restored by any ALS' under Part 3 of the *Surveys Act* resulting in what is known as a "Monument Plan".
2. An Official re-survey under s. 48 of the *Surveys Act* could be conducted which would restore the parcel boundaries as well as placing survey monumentation at parcel corners.

During this conference call, the Director of Surveys was asked to consider providing his thoughts and opinions during the preparation of a Council Report for presentation to the municipal council. The resulting report titled "Re-establishment of Lot Boundaries for Areas in Abasand, Beacon Hill and Waterways Affected by the 2016 Wildfires" was presented to the RMWB Council January 24, 2017.

To assist the Director of Surveys, the Planning and Development staff later provided documentation identifying parcels within the RMWB where wildfire destruction existed. A spreadsheet was provided along with mapping generated sketches for the majority of the locations showing the parcels under consideration for a re-survey. This documentation is discussed in detail under the official request to perform a re-survey.

Considerations prior to recommendation of a re-survey

The Director of Surveys established a team of staff members that would investigate and determine if an official re-survey would be the best solution to meet the requirements of the RMWB. The investigation would also consider any other solutions, as well as the pros and cons of any solution.

A large number of unknowns existed regarding the property boundary issues.

- Where are the areas within Fort McMurray that require survey monuments to be evaluated and restored or replaced? The fire destroyed pockets of subdivisions, sometimes multiple blocks and sometimes only one or two parcels.
- What is the condition of the survey monuments in these areas? Has anyone assessed the damage to the monuments since the fire? If the assessment has been done, who did the assessment?
- If individual areas are affected in different degrees, is it likely that different solutions might be better suited depending on the location rather than a single solution adopted to address all areas?
- What is the desired time line to complete the project? Can the work be done in stages? Do the monuments need to be physically in the ground or can coordinates (as defined under s. 47 of the Surveys Act) be used until re-construction has been completed to a stage where any “new” monuments placed will last?
- Has this issue been discussed with the Alberta Land Surveyors working in the Fort McMurray area?
- It was known that re-building was happening prior to the re-survey. What are landowners doing now to determine the location of their property lines in order to be issued a building permit? Is the RMWB providing any requirements that an Alberta Land Surveyor be involved in the process before issuing a permit (it was understood that there may be some non-survey companies providing “approximate” locations of property lines)?
- Have any landowners used insurance coverage to assist with the determination of their property boundaries? Of note, a number of the landowners in Slave Lake (following the 2011 wildfire there) did have insurance coverage for re-determination of their property boundaries.

The following pros and cons of conducting an official re-survey were documented.

Pros

- Since the Surveys Act is administered by the Department of Environment and Parks all facets of the re-survey would be administered by the department.
- Upon confirmation by the Minister, a re-survey is final and conclusive and shall not be questioned in any court, whether or not the monuments marking the original survey are subsequently found or their positions proved by other evidence. The re-surveyed monuments will govern the lot/block corners forward from the date of confirmation. On the other hand, a monument or re-establishment survey can be challenged by other ALS’.
- The re-survey would be done to the same standard as an official Part 2 survey under the Surveys Act.
- This could be seen as a positive collaborative effort between the Alberta Government, the Regional Municipality of Wood Buffalo and Alberta Land Surveyors to provide a service to the public in Fort McMurray benefiting all Albertans.
- This would reduce possible future litigation between individual landowners, ALS and others who rely on the integrity of the survey fabric.
- The municipality has access to funds (Disaster Relief Fund) to pay for a re-survey as required under the Surveys Act. This would not add extra financial burden to a population already dealing with the disaster
- While the intent of the re-survey would be to place monuments and define boundaries as they were prior to the fire, there is also the flexibility to adjust boundaries in certain circumstances, such as where there may have been known errors or ambiguous boundaries prior to the fire (here the re-survey could be used to ‘correct’ these previous issues), or where a slight adjustment of a boundary would be beneficial to all affected land owners (subject to their agreement and that all by-law requirements are kept etc.) such as in the case of a duplex already re-built or partially re-built and the common wall is slightly shifted from where it was before.
- A re-survey requires that that public be provided opportunity for input, both at the beginning of the process while the re-surveyor is collecting and evaluating evidence (affected parties are asked to provide any helpful information at this stage of the process) and especially near the end of the process through public hearings where they can review the work of the survey, where the monuments have been found or new ones placed, where their boundaries are being determined and so on. The Minister or delegate listens to any concerns and may make any changes if deemed appropriate accordingly, before the work is finalized.

- In many locations within the affected areas, monuments may have never been placed to define property corners. The re-survey provided opportunity not just to replace monuments where they may have once been previous to the fire, but to also place new monuments in corners where there never were monuments before. These monuments would be given governing status with the confirmation of the re-surveys and as such, the survey fabric would be even better physically demarcated on the ground than before.

Cons

- The time required to complete the re-survey would be lengthy. It could take a year or perhaps 2 years to finalize. This approach would take more time and money to complete than the possible alternative solution (monument plan) due to the legislative process required (advertising, public hearings, etc.).
- The work would require Director of Surveys' staff time to administer and even a greater amount of time to review the returns of the survey. The actual cost to the government in this regard could be significant, and would not be required if alternative approaches were pursued. However, the re-survey once confirmed, as stated above, cannot be challenged.
- As the process would be lengthy, what affect would this have for other surveyors who need to do work in these areas during the re-survey process? If they are using monuments, or placing monuments that have not yet been confirmed, what impact would that have on the survey work being done for the re-survey?
 - Success of the re-survey would largely be dependent on the cooperative efforts of the entire survey community, and a solid communication strategy by all parties including the local survey community, the municipality and the Director of Surveys Office.

Feedback of Local Alberta Land Surveyors (ALS)

In order to provide a clearer picture of the status of the survey monumentation in the areas affected by the fire, an email was sent to three Alberta Land Surveyors located in Fort McMurray. The following email was sent November 30, 2016:

We are getting concerns on the status of monumentation (destroyed/disturbed/good) in the neighbourhoods that got burned over in Fort McMurray. Knowing that you do subdivision work (I believe) in Fort McMurray, what's your take on it or what are your crews reporting back when they are venturing into these burned-up neighbourhoods? I'm not looking for any in depth report/comments, but just basic feedback on what the crews (or even yourself if you've been in these neighbourhoods) are finding.

Any comments you have will be appreciated.

Responses were received from three ALS, which provided an overall scope of the damage done to the survey fabric. It should be noted that a number of the opinions offered coincided with the thoughts/opinions expressed by the Director of Surveys.

ALS #1

- As you expected we were doing full lot surveys in preparation of rebuild activities for some clients, specifically in the communities developed prior to delayed monumentation and coordinated corners. This was primarily to establish grading but we also needed to confirm lot size for setback compliance. We noticed a wide variation on the integrity of the survey fabric, some areas we found monuments in great condition and matching plan within the expected tolerances. In other areas we found monuments missing or in different locations from previous surveys completed (holding what were considered stable sidewalk DHs. - drill holes). These disturbances are probably contributed to the machinery used in the demolition that occurred after the fire. Beacons Hill specifically already had poor/minimal evidence.

ALS #2

- Most of these burnt out areas were lacking in Survey evidence prior to the fire, since the fire, most of the posts used previously, have been destroyed or disturbed by the demolition contractors. And most of the plans only had the deflections posted.
- On the other side of the coin we have been finding posts that were previously inaccessible due to fences, drives and walkways.
- We do find enough to get the job done but with very extensive calculations and ties.
- One thing I am finding however when computing some of these positions is that the original plans have an abundance of curves that do not mathematically work with arc lengths shown on the plan, so it makes life a little more interesting. For example Plan 3382TR Lots 192-195 curve "N", arc lengths shown add up to 111.13 feet or 33.872m. The table shows the total arc length correctly at 113.45 feet 34.579m, a discrepancy of 0.707m.

- Since the rebuild has started many of our clients want the property lines staked and that becomes interesting as no one likes to lose a foot of land they thought their driveway was on, and no posts exist to substantiate that.
- Add to the mixture is that there have been companies unknown, that do not appear to be legitimate survey companies and have placed stakes purporting to be the “Approx” property corner, as well as staking property lines for construction which will eventually lead to some disputes between neighbors and penalties to the public from the Municipality for compliance issues. I have reported this behavior to the association and they have tried to track down some of these fly by night companies with no success.
- Personally I have always felt that a re-survey in these older and burnt out areas of town would be justified and now would be a perfect time to do so.
- I have heard that the municipality may be issuing an RFP for a large scale monument plan to theoretically help ascertain property lines, knowing that these posts could be disputed as they do not actually govern the boundaries. They are more concerned with the timeframe as construction is moving rapidly and we will be entering into a slowdown in the next few months as it turns colder.

ALS #3

- The resident Land Surveyors in Fort McMurray were trying to meet with the city from the start of June to raise the issue of posts and grades. Tony Brown (Challenger) proposed that, before major demolition, the local surveyors go in at our own cost to tie in posts and use a common control system.
- We finally got a meeting in September to try to outline our concerns and last week I had a conversation with the Legal Department. The city is exploring either a re-survey or a Monument plan but the legal department is still learning the difference. I had to explain the difference between putting a nail in the ground and a re-survey. They were under the assumption that any surveyor could just place a post and call it good. One of the ideas they had was to have each surveyor place posts during a stakeout then file a monument plan. It was explained that this would result in dozens of plans in each subdivision and cross registrations.
- The surveyors were hoping for a re-survey of the major problem areas but the Legal Department thinks that, with having to go through Council and the Province, it would take too long so they are looking at a monument plan. Based on how fast they are moving, my best guess is this will be done by the spring. However, we are putting in houses now so there could be some conflicts. In addition they stated that “if there are boundary issues due to the wildfire it is best to let the home owners work it out themselves” i.e. courts.
- Overall, what the city does not seem to understand is the difference between doing an RPR or a single new home in an old subdivision and re-building the entire subdivision. In an older area there is always secondary evidence that can be used to determine where the original monument/property line was. With starting from scratch we only have the posts and a different opinion for each surveyor.
- State of Subdivisions
 - The South part of Beacon Hill is very short of posts in the entire subdivision (4309 TR) The resident surveyors up here have been working closely and there have been only 6 or 8 found
 - The North Part of Beacon Hill (3383 TR etc.) is not as bad as the south part but there is a few areas that there is significant loss. Again we are putting in homes before the re-survey/Monument plan
 - Abasand (782 2731 etc.) A surprising amount of posts are still there but, again we are putting in homes before the re-survey/Monument plan
- Wood Buffalo (002 1164 etc.) This area is the best of the lot. As the one that placed most of the posts (I don't remember putting in so many bent posts in) I know this area. This was a deferred posting and post 1988 and Roger Ross delayed the posting a few years in order to have the grading and lanes placed. Because of this there are no major issues.
- Stone Creek (102 3470 and 092 3934). Some areas are very short of posts, and the short posts placed in the front in some areas have been shifted due to the equipment. I have no faith they are in the same spot as placed so I generally don't rely on them particularly where the duplexes are. All the ASCM's used for the deferred posting are also gone. In the east portion I estimate the majority of homes will be in before a re-survey/monument plan is done.

Official request to perform a re-survey

Section 48(1) of the *Surveys Act* is very clear as to who can request a re-survey and how the request is made.

Re-survey of s45 land in municipality

48(1) The council of a municipality may, on the application of 50% of the registered owners of the land to be affected, or without an application, pass a resolution that it is desirable to re-survey and place monuments at the corners of parcels the boundary lines of which were established pursuant to section 45.

After presentation of the report titled “Re-establishment of Lot Boundaries for Areas in Abasand, Beacon Hill and Waterways Affected by the 2016 Wildfires”, the RMWB Council passed a resolution formally requesting the Minister of Environment and Parks, the Honourable Shannon Phillips, to perform a re-survey on January 24, 2017.

“Moved by Councilor K. McGrath that the Municipality request that the Minister of Environment and Parks direct the Director of Surveys to re-survey the land and place monuments at the corners of lots in the areas of Abasand, Beacon Hill, Waterways and all other areas affected by the 2016 wildfires.”

CARRIED UNANIMOUSLY

With a resolution now passed, the RMWB, in consultation with the Director of Surveys began a detailed review of the area to be considered as part of the re-survey. The resulting review would be used in part to compose a letter requesting an official re-survey be conducted by the Minister.

Determination of what to re-survey

Throughout the process the RMWB relied on our knowledge and experience. The Director of Surveys had to be careful not to overly influence the decisions as to where a re-survey would be used and where not. The ultimate decision was to be the RMWB. Our main roles was to explain the purpose of the re-survey, the pros and cons and what other options could be considered. In doing so, it would have become clear as to what our thoughts were, and therefore difficult not to influence them, however the Director of Surveys had to ensure that they understood the decision was theirs.

Very early in the process of the re-survey, the Director of Surveys wanted to ensure an open and transparent climate existed between all of the entities involved. This would include regularly scheduled biweekly meetings with representatives from the RMWB. This meeting would later include, on an as needed basis, the contractor hired to perform the re-survey.

As soon as possible after the passing of the resolution on January 24, 2018, the Director of Surveys along with 3 staff visited Fort McMurray. The purpose of the visit on February 1st and 2nd was to meet with the RMWB team and those ALS' working in the area, sharing knowledge and ideas as to the best method to proceed. The Director of Surveys contingent also toured the major areas affected by the wildfire, guided by RMWB staff.

Prior to the meeting, the RMWB provided the Director of Surveys with a set of GIS generated diagrams identifying each parcel that had suffered physical damage attributed to the wildfires. These areas, along with counts and priorities, are shown below.

DESTROYED PRIMARY PROPERTIES FIRE 2016

AREA LOCATION	Count of AREA LOCATION	Priority
ABASAND (1 and 2)	435	1
BEACON HILL (1 and 2)	392	1
STONECREEK	284	1
WATERWAYS	223	1
WOOD BUFFALO	168	1
Total	1502	
DRAPER	11	2
MORGAN HEIGHTS	21	2
SAPRAE CREEK ESTATES	84	2
Total	116	
AIRPORT	2	3
ANZAC	11	3
BLACK SANDS LODGE - DML050078	1	3
CLEARWATER HORSE CLUB - DML2859	1	3
CLEARWATER RIVER LODGE - DML940038	1	3
DICKINSFIELD	7	3
DOWNTOWN	1	3
FORT MCMURRAY GOLF CLUB	1	3
FORT MCMURRAY TOURISM	1	3
GOLDEN EAGLE CAMPGROUND	1	3
GRAYLING TERRACE	5	3
GREGOIRE	4	3
PARSONS CREEK	10	3
PRAIRIE CREEK	3	3
THICKWOOD	2	3
TIMBERLEA	2	3
WALNUT CRESCENT	8	3
Total	61	
Grand Total	1679	

Key points resulting from the meeting were:

- The rebuilding process must not be hindered by the official re-survey.
- The re-survey should be accomplished in the shortest time possible.
- The survey findings and calculations should be available to the RMWB and other ALS' as the contracted survey firm carried on their work.
- All qualifying surveyors and survey firms be included in the RFP process.
- Ensure the RFP is written in a way that as many details as possible are provided as to what the expected re-survey is to accomplish and what is required.
- Consider the use of s. 47 of the *Surveys Act*¹ allowing both for the preservation of monuments and less time to complete the re-survey to a stage where reliable coordinates are available to all ALS' performing surveys in the affected areas.
- Evaluate if all 25 areas shown to have wildfire damage need to be part of the re-survey or could some areas with less than 20 parcels or with no damage to the cadastral fabric be better suited to other survey re-establishment methods.
- Only existing surveyed parcels should be re-surveyed and monumented. There was no advantage seen to monument all previous parcel boundaries that no longer exist.

During the tour of the areas affected, it was quickly apparent that re-building was well under way and owners were not waiting on an official re-survey. In fact, it was noted that many of the parcels now had foundations and almost a completed structure in place and this was only going to increase at a rapid rate as time goes on.

With opinions and suggestions from local land surveyors, the municipality and the province, the RMWB along with assistance from the Director of Surveys began the preparation of a Ministerial Order to be considered by the Minister of Environment and Parks. The first task was to determine which areas should be considered as part of the official re-survey and which areas would be better served by use of conventional survey methods such as re-establishment plans – monument plans. This was done using information obtained through use of the RMWB GIS program, registered plans from the Land Titles Office (LTO) and information provided by ALS' working in the areas. A report was prepared using the above mentioned information sources to do an in-depth evaluation of each of the 25 areas identified by the RMWB as having structural damage directly caused by the wildfire or the result of fire-fighting or clean-up efforts. The report based the evaluation on a number of criteria:

- The date and type of the original survey. This information directly relates to the monumentation placed at parcel boundaries. Original surveys done under s.47 of the *Surveys Act* may have or may not have monumentation placed at all parcel corners.
- The imagery available showing the immediate conditions after the fire and within a year of the fire did show those areas where extensive damage by large equipment would have destroyed/removed any monumentation. It would also show some areas where the structure had been destroyed but because of the size of the lot and the relationship of the structure to the parcel boundaries, damage to the monuments was not likely.
- Reports from ALS' on the condition of the monuments prior to the wildfire. These reports indicated areas that had already lost monuments even prior to the wildfire.

Re-survey areas

The original list of 25 areas identified by the RMWB was reduced to only 7. These 7 areas contained 95% of the total parcels originally identified.

Investigation survey

Of the remaining 18 areas, it was determined that 13 would form part of an "investigation survey". This investigation survey would consist of a contract, administered by the RMWB, where an ALS would perform an on-site inspection of the survey monumentation and provide their professional input to the RMWB. The ALS would determine if the existing monumentation is intact, requires some restoration or replacement or was a candidate for an official re-survey. Details of this project are discussed later in this report.

¹ delayed posting – where coordinates are determined for corners and these govern temporarily until a monument can be subsequently placed without the risk of being destroyed due to construction, usually within a year of plan registration unless permission is granted by the Director of Surveys for an extension – once placed and noted at the Land Titles Office as being placed, the new monuments govern and the coordinates are only useful as secondary evidence for future survey purposes

Ministerial Order under Section 39 and 48 of the *Surveys Act*

After completion of the report evaluating the areas that should be part of an official re-survey, the information was shared with the RMWB who then authored a letter requesting that a re-survey be conducted by the Minister. The letter, received March 13, 2017, identified potential areas to be considered by priority; 1st, 2nd, or 3rd. Click the icon below to view the letter.



AR85524 Letter.pdf

Upon receipt of the letter, the Minister requested that the Director of Surveys provide his input. The Director of Surveys consulted with the Environment Law Section as to the next steps in proceeding with an official re-survey. The result was a "Ministerial Direction" directing that a re-survey was to be conducted on specific areas. The Ministerial Direction also endorsed the use of s.47 as seen fit by the Director of Surveys. To view the signed Ministerial Direction click on the icon below.



Signed_Ministerial_Direction.pdf

The Director of Surveys now had the legislative authority to proceed with an official re-survey. The first priority was to prepare a detailed set of instructions to be used as part of an RFP. A financial process was also established to ensure invoices from a contractor were paid and that invoices would be sent to the RMWB in a timely manner to reimburse the government as required by legislation.

Notification of the re-survey

As legislated under s.39(3), the Director of Surveys shall publish notice of the re-survey in one issue of The Alberta Gazette and once each week for 2 consecutive weeks in a newspaper that circulates in the neighbourhood of the land to be re-surveyed.

The notification published in the Fort McMurray Today on August 4 and again on August 11, 2017 is shown below.

PUBLIC NOTICE

NOTICE OF RE-SURVEY


Alberta Environment and Parks

Pursuant to Section 39(3) of the SURVEYS ACT RSA 2000, c. s-26, I, Ravi Shrivastava, the Director of Surveys, hereby give notice that a re-survey will be completed in the following localities within the Regional Municipality of Wood Buffalo: Abasand, Beacon Hill, Draper, Saprae Creek Estates, Stone Creek, Waterways, and Wood Buffalo.

Any person having knowledge or information regarding the position of one or more survey monuments within any of these localities affected by the 2016 wildfire is asked to notify the Minister of Environment and Parks by registered mail before August 18, 2017 at the address below.

Minister of Environment and Parks
c/o Office of the Director of Surveys
15th Floor, Oxbridge Place
9820 – 106 Street N.W.
Edmonton, Alberta, T5K 2J6
Telephone: (780) 422-0051
Fax: (780) 427-1493

Attn: Ed Titanich

 Alberta Government

A copy of this notification was also published in the Alberta Gazette July 31, 2017.

In order to notify as many people as possible, the RMWB website also published the same notification. An email was also sent to all ALS' through their association, the Alberta Land Surveyors' Association.

Development of request for proposal

It became clear at the beginning of the re-survey process that the development of a Request for Proposal was going to be very complicated, trying to determine what is required to be done without knowing the extent of destruction to the cadastral fabric resulted in a number of meetings and drafts.

Some of the issues and items discussed:

- The survey must be integrated to survey control.
- All equipment used to perform the survey must be validated using the validation networks available in Alberta and sanctioned by the Director of Surveys.
- Survey work done must meet the minimum relative accuracy standards as defined in Part C, sections 1 and 2 of the Alberta Land Surveyors' Association Manual of Standard Practice.
- Identify that the re-survey will be done under s.47 of the *Surveys Act* (delayed posting).
- Assessment of survey evidence affecting all affected corners and boundaries in accordance with existing plans. This will include consultation with landowners as necessary.
- Prepare initial plan(s) along with a survey report to be submitted to the Director of Surveys for review.
- Place Temporary Survey Marks (non-governing) at all affected corners so that landowners can see proposed corners and boundaries in advance of the public hearing. Also, identify all noticeable encroachments.
- Prepare an Initial Plan Update – this version of the plan will show encroachments and Temporary Survey Marks. Once reviewed by the DOS Office, it will be used for the public hearing process.
- In consultation with the Director of Surveys, the surveyor conducting the re-survey shall recommend variances to lot-lines to accommodate encroachments if determined to be appropriate.
- Attendance is required at the public hearing held to give an opportunity for landowners to provide input / concerns.
- Perform field and plan amendments – based on the public hearing, the Minister may order changes to the plan, which typically would involve additional field work.
- Perform the registration of the plans at Land Titles.
- Complete the final posting of monuments within one year of the registration of the Re-Survey Plan or within a timeframe approved by the DOS (including removal of Temporary Survey Marks).

Bid proposals and evaluation

The RFP was listed on the Alberta Purchasing Connection (APC) website on July 18, 2017. As this project was initially expected to be over \$1 million, the proposal is required to be advertised for a minimum of 30 days. This meant that the deadline for proponents to submit their proposals was August 18, 2017. Between these dates, the Director of Surveys office received many questions from proponents, which were answered in a timely manner. All questions and their responses were made available to all potential proponents.

In total, 9 proposals were received by the Director of Surveys office. To evaluate these proposals, an evaluation matrix was designed. The criteria to the evaluation involved the qualifications of the project team involved, the service delivery approach proposed, any value added attributes included within the bid, and the total price. Four members of the Director of Surveys office individually reviewed all the proposals and scored the proponents on the first 3 criteria listed. These scores were averaged together and combined into a single evaluation matrix. A slide rule method was used to score the proponent's price, with the lowest bid receiving the full 45 points for the price criteria and all other bids scoring points based on the ratio of their price compared to the lowest bid.

Based on the above method, it was decided to award the contract to Pals Geomatics Corp. from Edmonton. Larry Pals, ALS, was phoned on August 25, 2017 to inform him and his team of the Director's decision. Mr. Pals agreed to take on the project and a contract was signed on August 29, 2017.

An announcement was made to the other proponents about the contract being awarded to Pals Geomatics.

Evidence assessment

Pals Geomatics began work on the re-survey directly after signing their portion of the contract on August 25, 2017.

Prior to Pals beginning the actual field work for the re-survey, an announcement was made through the Alberta Land Surveyors Association (ALSA) via their Friday emails to the membership. The announcement stated that a re-survey was being conducted in parts of Fort McMurray and if any surveyor were to conduct a survey in the affected areas, they were to contact Pals Geomatics.

The first steps were to prepare pre-calculations in the office to help aide field crews in staking out the parcel lot corners. Meanwhile, field crews were mobilized to Fort McMurray and began field work on September 7th, 2017. Most of the first days in the field were dedicated to tying in control monuments, including Alberta Survey Control Markers (ASCM), and establishing reference control markers in the ground. These reference control markers were placed in the form of copper caps in concrete, aluminum caps on rebar, and asphalt nails. The control markers were integrated with the found ASCM's to form a survey control network within each of the communities. These networks were a requirement in order to register the re-survey plan under Section 47 of the *Surveys Act*.

Once the control network was established, field crews proceeded to do an exhaustive search for evidence at every corner of the identified parcels. The vast majority of the evidence assessment took place from September through to December of 2017. Pals Geomatics was very accommodating responding to requests to find more evidence after the Initial Plans were reviewed by the Director of Surveys office. Evidence continued to be assessed periodically through all stages of the project as late as September 2018.

Not only did Pals Geomatics search for evidence at corners where one would expect a governing monument to be, but they also searched at parcel corners where governing evidence had not originally been required to be placed. In many of these positions, non-governing marks were found, such as iron bars, spikes/nails, and rebar. While greater weight was given to governing monuments in re-establishing the survey fabric within the affected communities, in some instances, where little evidence remained, these non-governing marks were used as part of Pals Geomatics re-establishment methods.

Initial Plans

Plan review

Once the field work, initial drafting, and plan checking was completed by Pals Geomatics, the "initial plans" were sent to the Director of Surveys office for review. The first plan received by the Director of Surveys was Abasand 1 around mid-October 2017. All files, including survey plans, AutoCAD DWG files, field notes, photos, etc., were shared by Pals Geomatics with the Director of Surveys. The first plan provided an opportunity to provide corrections that would apply only to Abasand 1 but other generic corrections to be used for the re-survey plans to follow.

The plan review process at the Director of Surveys office began with a Geomatics Technologist doing a thorough review of the plan. Not only were all the re-establishment methods reviewed, the plan was checked to ensure the information matched the field notes and the drafting met the standards of the Land Titles Procedure Manual (LTPM) and the ALSA Manual of Standard Practice (MSP). After the initial review, the plan was checked a second time by an ALS in the Director of Surveys office. The focus of the second review was on evidence assessment and re-establishment methods. Deficiencies and questions about the plan were compiled within a correction letter by both reviewers. Once both reviews were completed, a group meeting was held to discuss the more contentious items within the correction letter. Once agreed upon by the re-survey team within the Director of Surveys office, the correction letter was finalized and sent to Pals Geomatics.

Within each correction letter, space was provided for Pals Geomatics to reply to each bullet of the correction letter. Changes to the initial re-survey plan were made based on the comments of the correction letter and returned to the Director of Surveys office for a second review. The same process as before was then conducted by the Director of Surveys office, with more emphasis placed on reviewing the items within the correction letter.

The Director of Surveys plan review process began around October 2017 with the arrival of the first plan and continued well into June 2018. Additional changes to the re-survey plans were required after this time due to issues that arose in specific survey areas, but the vast majority of the plan review was conducted in this time-period. Initially, the Director of Surveys plan review kept pace with survey returns being delivered. The first few plans delivered were smaller surveys (Abasand 1 and Draper), which were completed first and delivered well ahead of the other surveys. Eventually, more survey returns were received as Pals Geomatics set a deadline of the end of December 2017 to send in all the first returns, a target that was met. As the remaining returns were greater in number and of increasing complexity, the plan review process within the Director of Surveys office encountered some delays in completing the review process.

Most of the plan review was completed between January and March of 2018, but some of the more complex plans, namely Abasand 2 and Beacon Hill 2, stretched into June 2018. This was complicated by the fact that Pals were required to complete the Temporary Staking stage in April/May 2018. Without a completed final initial plan allowing for the placement of temporary marks in some of the affected areas, the Director of Surveys prioritized completing reviews of the remaining plans on the evidence assessment and re-establishment methods used. The coordinates of the new lot corners were finalized in time for the field crews to place temporary marks in the spring of 2018.

Temporary staking

One of the requirements of the contract was the placing of Temporary Survey Marks (non-governing) at all affected corners so that landowners could see proposed corners and boundaries in advance of the public hearing.

In fulfilling this requirement, Pals Geomatics placed flagged iron spikes along with a marked lath at each position intended to define a surveyed boundary upon confirmation of the re-survey.



Example of temporary staking

As part of the same requirement all noticeable encroachments were to be surveyed and shown on the “Temporary Staking” plans. An example of one of these plans can be viewed by clicking on the image below.



Click to View

Public hearing

Section 40 of the *Surveys Act* prescribes a hearing to be held prior to the confirmation by the Minister.

Confirmation of re survey

40(1) On receipt of the plan and other records under section 39(6), the Minister

- (a) shall publish notice of it in one issue of The Alberta Gazette and once each week for 2 consecutive weeks in a newspaper that circulates in the neighbourhood of the land re-surveyed, and
- (b) shall specify in the notice a day, not less than 2 weeks from the date of the last publication of the notice, on which the plan and other records will be considered and the parties affected by it may be heard.

(2) After the hearing under subsection (1), the Minister may either confirm the re-survey or direct that any amendments or corrections that the Minister considers necessary be made, and shall confirm the re-survey as amended or corrected.

(3) On confirmation by the Minister of the re-survey, the Director shall amend the official plan accordingly.

(4) The monuments established by the re-survey mark the boundary lines of the land re-surveyed for all purposes.

As legislated above, the Director of Surveys shall publish notice of the re-survey in one issue of The Alberta Gazette and once each week for 2 consecutive weeks in a newspaper that circulates in the neighbourhood of the land to be re surveyed.

The notification published in the Fort McMurray Today on November 1 and again on November 8, 2018 is shown below.

PUBLIC NOTICE


NOTICE OF RE-SURVEY

ALBERTA ENVIRONMENT AND PARKS

Pursuant to Section 40(1) of the SURVEYS ACT RSA 2000, c. s-26, I, the Executive Director, Provincial Programs Branch, hereby give notice that the plans and other records have been received of a re-survey completed in the following localities within the Regional Municipality of Wood Buffalo: Abasand, Beacon Hill, Draper, Saprae Creek Estates, Stonecreek, Waterways, and Wood Buffalo.

The plans of the re-survey will be considered and parties affected by the re-survey may be heard at the following location on the following dates and times:

November 29 and 30, 2018
between 10 a.m. and 8 p.m. at the
Fox Den, Regional Recreation Corporation of Wood Buffalo,
1 C.A. Knight Way, Fort McMurray, AB, T9H 5C5
– MacDonald Island Park



A copy of this notification was also published in the Alberta Gazette October 31, 2018.

In order to notify as many people as possible the RMWB website also published the same notification. An email was also sent to all ALS through their association, Alberta Land Surveyors' Association on November 2, 2018.

The hearing was attended by David McKenna (representative of the Minister), Ravi Shrivastava (Director of Surveys), Al Flim (Manager), Ed Titanich (Team Lead), all from the Alberta Government. Larry Pals, ALS and Brad Machon, ALS represented Pals Geomatics Corp. At various times throughout the hearing, staff from the RMWB also attended.

It was unknown how many affected or interested parties would attend or what concerns would be brought forward for the Minister to consider. Thus, two full days starting at 10 a.m. and ending at 8 p.m. were scheduled. It was hoped this would allow the opportunity for individuals to attend even if their work involved shifts. In the end, no one came forward with any concerns or considerations for the Minister.

It was not clear why no one attended, but some thoughts are outlined below:

- The process of the re-survey had been open and transparent from beginning to the hearing stage.
- Communications via the RMWB web site and social media had been used from the beginning.
- Pals Geomatics Corp. had been in constant communication with individual landowners during the survey proceedings and had also provided access to any survey information to any Alberta Land Surveyors working in the area of the re-survey.
- The re-survey was to re-establish the boundaries as they were before the fire and the re-survey did not find any major differences between previous boundary locations and the new locations.

A number of considerations were presented to the Minister's representative by Pals Geomatics Corp. and the Director of Surveys. These included the inclusion of 42 parcels to the official re-survey plans. These parcels were included because all boundaries of each parcel were defined by monuments placed during the re-survey of surrounding parcels. Including them would avoid the potential of conflict in the future, especially if any original evidence happened to be found which once defined these particular parcel boundaries. The Minister's representative accepted the inclusion of these parcels and instructed Pals Geomatics to make any modifications to the survey plans accordingly.

Registration of plans

The Director of Surveys took responsibility to ensure the 9 re-survey plans were registered at Land Titles. This also included the registration of a number of related documents required by Land Titles. An example of all the documents required to be registered can be viewed by clicking on the icon below. They include:

- A letter from the Director of Surveys granting Larry Pals permission, under s.50 (3) of the *Surveys Act*, to remove survey monuments no longer representing parcel boundaries.
- The Surveyor's Affidavit, which also included the signed Minister's confirmation.
- Memorandum from the Director of Surveys office stating the rationale for the re-survey.
- A copy of the Ministerial Direction signed by the Minister to proceed with the re-survey.
- A list of all the affected registered plans along with the note to be added to each plan.



ABASAND 1.pdf

Example Registration Documentation

All plans and associated documents were registered by January 3, 2019.

Final posting

The use of s.47 of the *Surveys Act* to perform the re-survey requires the Alberta Land Surveyor to file Form 11.1 (Monumentation Certificate) legislated under s.77 of the *Land Titles Act*.

Registration or filing of non-monumented survey plan

47(1) Notwithstanding anything in this Act, a surveyor may, without placing the monuments required by section 45(1), submit a plan for registration at the Land Titles Office or filing at the Metis Settlements Land Registry if sufficient survey control markers exist in the vicinity of the survey.

(2) Subject to subsection (4), the co-ordinates of the survey control markers and of the monuments, as shown on the plan of survey, determine the boundary lines established by the survey and plan.

(3) A surveyor who submits for registration a plan pursuant to subsection (1) shall, within one year from its registration or within a longer period of time specified by the Director,

- (a) place the monuments required by section 45(1) in accordance with the survey control markers and the co-ordinates shown on the plan, and
- (b) file with the Registrar proof under oath, in the form prescribed by regulations under the *Land Titles Act*, of having done so.

(4) On registration of the form referred to in subsection (3)(b), the Registrar shall endorse a memorandum on the plan, and the monuments placed pursuant to subsection (3) determine the boundary lines as though they had been placed before the registration of the plan.

(5) Notwithstanding subsection (3), if the surveyor who submitted a plan pursuant to subsection (1) ceases to be registered as an Alberta Land Surveyor, or for any other reason fails to satisfy the requirements of subsection (3), some other surveyor appointed by the Director may carry out the requirements of subsection (3).

Larry Pals, ALS filed all Monumentation Certificates on June 5, 2019. This was the final phase of the re-survey contract.

Investigation surveys

It was determined that 13 areas would form part of an “investigation survey”. This investigation survey would consist of a contract, administered by the RMWB, where an ALS would perform an on-site inspection of the survey monumentation and provide their professional input to the RMWB. The ALS would determine if the existing monumentation is intact, requires some restoration or replacement or was a candidate for an official re-survey.

The RMWB issued a Request for Quotations on August 30, 2018 from the ALS to perform an “investigation survey” on 13 parcels in Fort McMurray or areas surrounding. These 13 areas were:

AREA LOCATION	NUMBER OF PARCELS
AIRPORT	2
ANZAC	12
DICKINSFIELD	7
DOWNTOWN	1
FORT MCMURRAY GOLF CLUB	1
GOLDEN EAGLE CAMPGROUND	1
GRAYLING TERRACE	5
PARSONS CREEK	10
PRAIRIE CREEK	3
SAKITAWAW TRAIL/GREGOIRE/FORT MCMURRAY TOURISM	5
THICKWOOD	2
WALNUT CRESCENT/MORGAN HEIGHTS	31
Total	80

The RMWB awarded a contract to WSP/OPUS, the survey to be done under the direction of David Marquardt, ALS. The investigation survey was conducted on all the parcels resulting in a recommendation that none of the areas required to be added to the re-survey. Mr. Marquardt proceed to evaluate each area placing re-established monuments for those that required them and then registering a “Monument Plan” with Land Titles.

Issues encountered in re-survey

Use of Section 47

The use of deferred monumentation under section 47 of the *Surveys Act* was the preferred solution for the re-survey of the fire affected communities in Fort McMurray. In addition to being expeditious, it would also enable the re-survey to keep pace with the rapid construction activity being carried out. Further, it would protect new monuments from damage resulting from the ongoing construction/grading activities. It would also reduce the extra work required to remove monuments placed prior to a hearing where a decision to change part of the survey was brought forward and accepted by the Minister. All affected stakeholders including the Director of Surveys Office, the local Alberta Land Surveyors, and the RMWB strongly desired the use of s.47.

The use of s.47 did prove to be a good option as it allowed Pals Geomatics to proceed without delays to the hearing stage. In order to meet the requirements of section 39 (6) (b) & (c) of the *Surveys Act*, which places an obligation to “... *place monuments to mark the corners of the re-surveyed land, and submit a plan and other records respecting the re-survey to the Minister*”, Pals Geomatics was instructed to place temporary spikes and lath at each coordinated parcel boundary. This

provided landowners (and other surveyors) the opportunity to visualize where their property corners were before the hearing and express any concerns they may have had to the Minister.

Even though approximately 50% of the survey monuments could not be placed, it was still considered a success. The reason many of these monuments could not be placed was due to new fence corners and utilities that had been already installed. The fence corner posts were well within tolerable limits, no more than half the width of a fence post, thereby providing assurance that the re-survey had accomplished its goal of restoring the original boundaries back to the locations that existed prior to the fire.

Posting of lot corners from surveys between 1912-1988

Section 45(5) of the *Survey Act* reads:

Establishing boundaries

45(5) Notwithstanding subsection (4), every lot on a linear block boundary in a subdivision survey shown on a plan registered at the Land Titles Office after February 16, 1912, and before June 9, 1988 shall have a frontage measurement proportionate to the total distance between the corners of the block in the same ratio as the frontage measurement of each lot shown on the registered plan bears to the total distance between the

This was a point of discussion within the Director of Surveys office. It was determined by the Director of Surveys that the Minister is granted authority to determine how a re-survey is to be conducted. Therefore, it was decided that the re-survey would place monuments at all corners of a parcel within the affected areas, regardless of whether the corner was previously monumented or not (i.e. lot corners on linear boundaries between block corners between 1912 and 1988). This could also include parcels described by metes and bounds (i.e. W ½ Lot 2 together with the easterly 20 feet of Lot 3) or by a Descriptive Plan². The plan should give new lot and block designations to these latter two so that a new title can be issued for the same.

While the title would still refer to the original plan, the boundaries are now governed by the re-survey plan. It was determined that it would be more valuable to the citizens affected by the re-survey as their parcel corners are now marked by a survey monument becoming more readily visible.

Survey Monuments

Found Off Line

Undisturbed monuments no longer defining an existing parcel corner were found throughout the project. Since new monuments placed by the re-survey would govern over the original monuments, there was no reason to keep some of these original monuments in the ground. These monuments were not being relied upon by anyone as well as causing future confusion and conflict.

However, these monuments were to be tracked. Monument descriptions were labelled on the plan at the respective positions with the dimensions listed and the denoting the post had been removed. Additionally, s. 50(3)³ letters were issued to document these posts and registered with each plan.

Determination of Monuments to be Part of Re-Survey

Which monuments would be considered part of the re-survey and therefore given official status? Standard survey practices used in establishing or re-establishment parcel boundaries require use of existing monuments surrounding the area surveyed. After much discussion the Director of Surveys decided that a solid bold line be placed on the boundaries of all those lots listed in the title block of the plan. Only those monuments on those boundaries would be given governing status, and that any other found or placed monuments not part of those boundaries could be challenged as with any other survey.

Witness or Reference Monuments

The use of witness or reference monuments was contemplated for positions in the more key areas where physical reasons prevented posting of a monument. A coordinate could be temporarily provided at a lot corner, and if unable to post in the future when posting (i.e. due to a fence post), a physical monument could be placed at a reference position. It was decided not to

² limited use plan which is a graphic representation of a metes and bounds description where boundaries are determined using only distances and angles/bearings rather than the use of actual monuments

³ granting permission from the Director of Surveys to remove certain monuments

use this option since it could create ambiguity, and the actual plans themselves would not have shown these physical monuments.

Natural boundaries

Discussions with Land Titles were held regarding whether the banks of water bodies should be re-surveyed to the location that they were before this re-survey. It was decided that because the goal of the re-survey was not to change any titles as part of the process, the old bank would still be shown on the re-survey using dashed lines to represent the current bank.

Delay in delegating authority to act on behalf of the minister

As a re-survey is legislated under Sections 39 and 48 of the *Surveys Act*, the Minister is involved in several aspects of the re-survey. The Minister's first involvement is to make a decision on whether to accept the resolution from the municipality to direct the Director of Surveys to complete a re-survey. Next, the Minister is to take part in a Public Hearing where the public may collect information and be heard with their concerns. After the hearing, the Minister may ask to make amendments to the re-survey plan. Once all amendments are completed as per the Minister's instruction, they will sign the plan to confirm it. The role of the Minister can be filled by either the Minister of Environment and Parks, the Deputy Minister (DM), or a delegated authority by either the Minister or Deputy Minister.

A resolution was passed by the Regional Municipality of Wood Buffalo on January 24th, 2017. A decision to proceed with a re-survey by Minister Shannon Phillips was made on May 11th, 2017. As the appropriate legislative responsibilities were required to initiate the re-survey, this first step was essential. Anticipating further delays with the Minister or Deputy Minister due to their busy schedules, the Director of Surveys proceeded to obtain a delegation of authority to a government employee more familiar with the re-survey, and also with a more flexible schedule. Initially, it was considered that the Director of Surveys would be the ideal candidate to act on behalf of the Minister for the re-survey. After some contemplation, the Director of Surveys felt this would be a conflict of interest as the role of the Minister should be able to balance the concerns of the public with the needs of the re-survey. The Director of Surveys would be involved in the coordination of the re-survey and may not be able to balance these needs.

The preferred choice for the delegated authority was the Executive Director of Provincial Programs Branch (PPB), Scott Milligan. The Ministerial Order (MO) was signed October 12, 2018, at which time both the ADM of Operations and the Executive Director of PPB were delegated authority.

With a delegated authority in place, the Director of Surveys office began to prepare for a Public Hearing in Fort McMurray. Unfortunately the Executive Director, the delegated authority, was unable to fill their duties and delegated their authority to David McKenna, Director of Provincial Wetlands Water Boundaries. It was Mr. McKenna who represented the Minister in the Public Hearing in Fort McMurray and confirmed the re-survey plans.

Registration of other plans during re-survey

It was known that the re-survey would take some time to complete. It was also known that the rebuilding of Fort McMurray was not going to wait for the completion of the re-survey, nor should it. Consequently, this meant that the re-survey had "moving goal posts". During the re-survey, several parcels were sold, transferred, consolidated, and re-subdivided. This meant that some re-survey plans would require alteration to show the new parcels. Some of these new parcels were defined by a Descriptive plan, which does not require survey monumentation to define the boundaries and therefore caused no problems with the re-survey. However, some surveys placed new monuments that conflicted with the re-surveyed boundaries.

As previously mentioned, at the beginning of the re-survey, an announcement was made through the Alberta Land Surveyors Association (ALSA) via their Friday emails to the membership. The announcement stated that a re-survey was being conducted in parts of Fort McMurray and if any surveyor were to conduct a survey in the affected areas, they were to contact Pals Geomatics. Pals provided their most updated re-survey plan to any surveyor who asked in order to coordinate surveys. This happened on many occasions and no issues were reported for the most part.

Two notable exceptions included a consolidation plan in Waterways by Geoff Scott, ALS, and a handful of surveys by LeMont Edwards, ALS, in Abasand 2. With the former survey, Mr. Scott consolidated two parcels by a Descriptive plan; one lot defined by a subdivision plan and the other by a Certificate of Title (C. of T.) description; both of which were included in the re-survey area. The original plan (182 1793) by Mr. Scott had contradictory dimensions within the C. of T. parcel. In order to resolve this issue, it was decided that the C. of T. had to eventually refer to a plan of survey, as opposed to a metes and bound description. Mr. Scott was willing to correct his plan via Section 92 of the *Land Titles Act* and Land Titles (LTO) was willing to change the title of the C. of T. parcel.

The other notable incident involved an ALS, within the Abasand 2 area. Early in 2018, the ALS made contact with Pals Geomatics about one survey they were conducting in the area and while they did place new evidence in his survey, it did agree with Pals re-establishment methods. Unfortunately, through a miscommunication error between the two parties, the ALS completed two other surveys in the area without Pals Geomatics knowledge. One survey (an easement) placed monuments that didn't agree with the re-survey and the other survey used evidence for re-establishment methods that Pals found to not exist anymore. For both surveys, Pals agreed to show the posts placed by the ALS offline on the re-survey plan.

To ensure this wouldn't happen again, the Director of Surveys office contacted LTO and asked if there was any way to flag plans in the re-survey area before they were registered. LTO were willing to help and contacted the Director of Surveys office whenever a new plan near or within the re-survey was being examined.

Adding/removing lots during the re-survey

Prior to the Ministerial Order being passed to commence the re-survey, the areas that were affected needed to be identified. The RMWB had provided GIS data and maps to show what parcels were affected by the wildfire. Their determination of what parcels to be identified was based on whether a structure (i.e. a house, shed, etc.) was destroyed by the fire. These maps were accepted by the Director of Surveys office and provided to the Minister to show the parcels to be considered in the re-survey.

Initially it was thought that these parcels, and only these parcels, were to be re-surveyed. However, in the Ministerial Order, the direction given by the Minister was to conduct a re-survey in the affected communities and made no mention of specific parcels. This vague direction caused some confusion as to what could be re-surveyed and what shouldn't be re-surveyed.

There were cases where some parcels were dropped from the re-survey as they were owned by the RMWB and retracing the boundaries would create more confusion than to actually leave it be. This was found in 2 large parcels in Waterways; one along the Clearwater River and another parcel being the remainder of a quarter section.

There were other cases where a parcel was not included in the re-survey because no structures existed on the parcel prior to the wildfire. This created an issue for the re-survey because of a possibility where a single lot within a block could be governed by the previous plan of survey. These parcels would then be surrounded by lots, in the block, governed by the re-survey which could result in an overlap or gore in the survey fabric. It wasn't until late in the process that some of these single lots were accepted into the re-survey, after direction from David McKenna, delegated authority for the Minister, was given.

Lastly, this process failed to identify parcels with undamaged structures, but their lot boundaries may have been affected by the rebuilding process. This was mostly found in blocks surveyed between the years 1912 and 1988, when the block corners governed the lot boundaries. While these block corner monuments were re-established using good survey practices, the parcels not included in the re-survey would still be governed by the original block corner. If new evidence was found of the original block corner, boundary uncertainties could occur. This needs to be addressed in future re-surveys.

Plans registered after commencement of the re-survey needing to be part of the re-survey

During the process of the re-survey a number of new surveys were conducted. These surveys resulted in the registration of survey plans at Land Titles. Each case was reviewed independently to determine how they affected parcels included in the re-survey. Every survey was checked to determine if their boundaries conflicted with those boundaries determined by the re-survey. Any issues discovered were resolved with the cooperation of the ALS responsible for the survey plan.

It is noted that in all of the cases above, the surveyors did not consult with Pals Geomatics while conducting their surveys.

Summary

The issues were resolved and can be summarized as:

- Use of legislation allowing delayed posting (sec. 47 *Surveys Act*)
- Review legislation dealing with historical types of surveys (sec. 45(5) of the *Survey Act*)
- Survey Monumentation:
 - Existing monuments off-line
 - Existing monuments to give official status
 - Use of witness or reference monuments
- Treatment of natural boundaries
- Lessen as many delays to the process as possible
- What are the effects on other types of registered plans, i.e. Descriptive, or plans registered during the re-survey.
- Additions or removal of parcels after the re-survey has started but before official confirmation

Considerations for future re-surveys

Communication and transparency are keys to a successful re-survey

All entities affected or participating in any re-survey have to be identified and involved in the process as soon as possible. A method of communication that is open and transparent should be established using as many different means as possible. The RMWB was part of the communication from the beginning to the end. They provided a communications link to the public via their website and social media platforms. The Alberta Land Surveyors community was kept informed throughout the re-survey process.

It was though this open and transparent communication that ensured very few issues were encountered. Any issues that did occur were successfully resolved in a timely matter.

Changes to the Surveys Act regarding outdated communication methods and inclusion of modern methods, are being considered.

Delegate ministerial authority earlier in the process

Unless a future re-survey is of high political importance and/or receiving significant media attention, it is assumed that the Minister or Deputy Minister will likely want to delegate their authority for the remainder of the re-survey process once they have directed to proceed with a re-survey. The ideal delegated authority is someone who will act on the public's behalf, is familiar with the re-survey legislation, and have the scheduling flexibility to complete the Ministerial tasks involved in the re-survey. This individual does not require an in-depth knowledge of surveying. Preferably, this person is not the Director of Surveys. It is recommended that this delegation of authority is provided at the same time as the Ministerial Order directing the Director of Surveys to re-survey the affected areas.

There exists a reluctance to initiate a re-survey by municipalities. In the majority of instances this is seen as a consequence of the cost is borne by the municipality. The current Surveys Act is somewhat restrictive as to the available options that can be used by the municipality. Work is currently underway to change the Surveys Act to provide more flexibility in payment options by the municipality.

It is imperative that lengthy delays in authorizing a re-survey are avoided. The public, land owners and community, should not wait to have their survey fabric restored.

Identifying what parcels should be re-surveyed

In order to identify all affected parcels that require a re-survey, the Director of Surveys recommends a complete evidence assessment before a decision is made by the Minister on whether to proceed with a Re-survey. This would apply to re-surveys after a natural disaster, such as a wildfire, and re-surveys for any other reason. This way, the Director of Surveys will have a clearer picture of what survey evidence is missing.

It is also recommended that any re-survey of a block originally surveyed between 1912 and 1988, where block corners govern the lot corners, include all the lots within the block in the Re-survey, regardless of whether the parcel was damaged or not.

Additionally, for any other survey, where every lot is posted, an evidence assessment will be made on adjoining lots. It is recommended to include in the re-survey any and all adjoining lots within the block that are missing any survey evidence. The last of these adjoining lots should border along a lot/block boundary that is part of a stable survey fabric.

Involvement of Alberta Emergency Management Agency

The Alberta Emergency Management Agency (AEMA) should be involved very early in a re-survey, which is initiated due to a disaster, manmade or natural. AEMA has the ability to provide financial assistance to a municipality to recover from a disaster. Given that the number of natural disasters are increasing throughout Alberta, AEMA should have an understanding of what a re-survey is and how it can be used to ensure parcels of land are re-established preventing uncertainty and possible future boundary uncertainties.

One recommendation is for the Director of Surveys to conduct presentations to members of the AEMA describing what a re-survey is, using Fort McMurray as an example. Under Alberta legislation, the cost of a re-survey is borne by the municipality. The municipalities should be made aware of this. The municipality can then consider this cost when putting forward a budget need to any relief agency, provincial or federal.

Scope of the re-survey

A re-survey should consider what the extent of the area to become part of the re-survey. How many survey monuments and parcels will be involved? When does the re-survey stop reviewing survey evidence?

A re-survey should consider what the extent is of the area to become part of the re-survey. How many survey monuments and parcels will be involved? When does the re-survey stop reviewing survey evidence? Under Alberta legislation, the Minister has the authority to move boundaries. This legislation is not taken lightly. The Minister is required to communicate the results of any re-survey to all affected persons before confirmation. These persons must have the right to express any concerns they have.

Provide a list of affected plans to LTO before Evidence Assessment

Re-surveys are not meant to delay the normal transaction process of real estate or new surveys within a re-survey area, particularly if the re-survey occurs after a natural disaster like a wildfire. However, these surveys cannot be found to contradict the re-survey. The Director of Surveys recommends to provide a notification to all land surveyors via the ALSA early in the re-survey process. Additionally, the Director of Surveys recommends to contact LTO prior to the re-survey and provide a list of affected plans and areas. LTO can then acknowledge any new surveys that may affect the re-survey and inform the Director of Surveys office.

Conclusion

The disaster caused by the wildfires in 2016 was the first time the legislated re-survey process was to re-survey the damage caused to the survey fabric. This was the largest re-survey conducted in Alberta and may be one of largest legislated re-surveys done in Canada.

The overall goal of the re-survey was to re-establish the survey fabric providing a foundation guaranteeing parcel boundaries to ensure a stable base upon which to rebuild and develop for all individuals affected.

In order to accomplish this all affected individuals were given access to input into the final official re-survey. Lines of communication were established very early into the process. Consultation between the Regional Municipality of Wood Buffalo, the Alberta Land Surveyors, the Land Titles Office and the Director of Surveys Office was encouraged from the beginning and was considered essential to a successful outcome.

It is expected that the frequency of future natural disasters will only increase and it is hoped that the knowledge of the existence of a legislated re-survey will prepare governments, relief agencies and individuals on methods available to restore the survey fabric.