Hauraki Catchment Board Files Tairua – Pauanui Area

1/22/0 Shingle from water courses. Volume 2. Report starts February 1957.

Associated files: Lands and Survey file 3/686 Hamilton District Office.

The land settlement Board was working a license to extract shingle; however, it was not specified where they would be doing the extraction. SC, RCC and Land and Survey issued a circular in 1956/7 on the control of shingle extraction in rivers;

1. In tidal rivers or where tidal action occurs it was owned by the Crown and controlled by the Marine dept,

2. Navigable rivers (as defined in s206 of the Coal Mines Act 1925) owned by the Crown and administered by L&S,

3. Non-navigable waterways where there are fishing or road reserves owned by Crown and administered by L&S,

On all other water courses the shingle is owned by the adjoining landowner.

1/22/0 Shingle from water courses. Volume 3. Report starts October 1971.

January 1975 (Works file 72/25/2C/7), application for 16,000 yds³ (12,234 m³) shingle and 4,000 yds³ (3058 m³) from Tairua River for sealing SH 25 between Tairua and Hikuai. A further request was made in April 1975 for 3,000 yds³ (2294 m³) of shingle from the Tairua River. NWASCO (file 72/2/1/11) produced draft guidelines for shingle extraction from New Zealand rivers and coasts.

1/22/0 Shingle from water courses Volume 4. Report starts April 1978.

The file commences with a report on sand mining in the Coromandel Peninsula (Works file 47/16) stating that the HCB is to phase out mining in any area suspected of being a closed system or where there is insufficient information about the resource. There are a series of applications to mine sand from the entrance of Whangamata Harbour, Tairua Harbour, Whitianga Harbour and the Katikati entrance to Tauranga Harbour.

1/22/0 Shingle from water courses Volume 5. Report period April to June 1979.

The Tanner sawmill obtained a licence to remove 300 m3 shingle from the Tairua River.

1/22/0 Shingle from water courses. Volume 6. Report starts July 1982.

From late 1982 through to 1984 the Board were conducting a sand and shingle resource assessment for the whole of their region. A table of material used and the source for the previous two years is included in the report. It was noted that there had been a number of "one off" extractions approved in connection with bridge construction around the Peninsula. There is a draft copy of the Sand and Gravel Report.

2/11/0 Eastern Catchments. Parts of Thames and Ohinemuri Counties. Volume 3.

Report period January 1974 to August 1975. In June 1974 there was an application to build a Marina at Tairua. The proposal was turned down as the plans were too incomplete.

<u>13 December 1974</u>: The Tairua marina proposal gets the go-ahead but without the boat launching ramp.

<u>28 August 1974</u>. A report entitled "Foredune erosion and levelling foredunes, Coromandel Peninsula with particular reference to Pauanui" was released. <u>September 1974</u>: A proposal to subdivide the Semmens Block at Tairua.

2/11/0 Eastern Catchments–Parts of Ohinemuri and Thames Counties Volume 2. Report period 1971–1974.

<u>November 1971</u>: The diversion of Grahams Creek in was actioned illegally to flow close to Ocean Beach and past the reclaimed area. It was presumed that this was done to enhance channel scour to provide boat access to the reclaimed area. Paeroa Office has copies of 10 Chain to Inch photograph of 1965 Nos. 170 and 180, Lower Tairua River. Flood in Tairua River 9 March 1972. Photographs supplied by Thames County Engineer.

<u>April 1972</u>: the Board obtained photographs of the historic 1966 flood in the Tairua River.

<u>19-22 June 1972 (?)</u>: Report by J.G. Gibb on the condition of Buffalo Beach, Cooks Beach, Tairua, Whiritoa and Waihi beaches together with comments on the condition of the Tairua, Wharekawa and Whangamata estuaries. The report summarises many comments from earlier work on the Coromandel coast. However the descriptions of the beaches are important as they provide an "as is" description of the condition of the beaches at that time.

2/11/0 Eastern Catchments: Parts Thames and Ohinemuri Counties. Report period 1963–1971.

The flood of 8 March 1962 was the second or third highest flood in the previous 26–30 years. Largest flood was that of Jan-Feb 1936.

August 1964: Erosion along the bank of the Tairua Estuary from Pepe bridge eastwards along Manaia Road.

<u>March 1966</u>: A proposal was made to cut and burn 132 chain (2.6 km) growing along the Tairua River channel. This proposal also included the poisoning of those growing on the straight sections of channel and on the inside of bends. This was suggested to reduce flood water levels and get water to the estuary quicker.

<u>May 1969</u>: The Pepe Estuary marine playground proposal was presented to the Board. This proposal was to put a weir in the Pepe Estuary under the bridge in order to control water levels. It is more fully discussed in the MWD file notes. Note here that Tauranga County have information on the early development of Waihi Beach.

2/3/121000-124000 (vol. 1 1967-1978) Tairua Area Catchments. Regional Council files scan No. 10639.

<u>April 1978</u>. The file commences with the proposal by R.W and D.P. Turner to carry out some reclamation in the Tairua Harbour. The area of interest was a small bay upstream of the Pepe Bridge on the north side of the estuary to enlarge the esplanade reserve and make sufficient room for motel expansion. The proposal includes an Environmental impact assessment by Murray North and Partners together with a report from Bioresearchers Ltd.

This file contains the map of sedimentation in Tairua Estuary 1944-1975. NO 1709

<u>11 May 1976</u>. D.N. Boak and partners invite the Catchment Board to a meeting in Pauanui on future development options for Tairua Harbour to be held on 15 June. The meeting was eventually held on 22 June. Members consisted of Representative from the District Council, Ministry of Works and Development, Mines Department, Lands and Survey Department two developers and the Hauraki Catchment Board.

Consultants and developers appeared to be behind the meeting which was chaired by the District Council Chairman. Proposals were made about most aspects of harbour development and included Marinas, moorings, boat launching ramps, reclamations, and channel widening.

The District Council wanted general support for the plan as a way forward for future development. The District Council also thought that the concept could be a pilot for future

development throughout the peninsula. Catchment Board Representatives more cautious and wanted written proposals so that technical staff could evaluate each aspect of the proposed development. One point that they did note was the claim that the harbour was polluted.

<u>27 July 1976</u> the Catchment Board suggests to the District Council that the Board should prepare a catchment management plan for the Tairua River.

<u>8 December 1976</u> Approval given for 8,500 yds³ (6,500m³) shingle to be taken from Tairua River 300 m below the Broken Hills Road ford.

<u>November 1978</u> R.W. and D.P. Turner applied to reclaim part of the Pepe Estuary upstream of the bridge to make way for a motel expansion. Ministry of Works staff, both Paeroa and Hamilton recommended that the application be declined (File MWD Hamilton 54/4/415, Paeroa 7/27).

<u>13 July 1977</u> Hauraki Catchment Board and Regional Water Board Report on the Harbour (estuary) of the Tairua River.

The report made a number of recommendations:

- 1. That it be recognised that the Tairua Harbour is the estuary of the Tairua River, and stability of which is of fundamental importance to the residential and industrial developments in the twin townships of Tairua and Pauanui, from the points of view both of hydraulics and the environment.
- 2. That siltation in the estuary appears to be continuing with the inevitable result of reduced tidal volumes (entering and leaving the harbour) and reduced channel capacities for the periodic great floods, which in turn can lead to unpredictable erosion both in the harbour and along the ocean beaches, together with higher flood levels adjacent to the twin townships, and possibly, even damage to the access to Paku.
- 3. Tairua Catchment Scheme. That there is urgent need for a catchment scheme for water and soil conservation purposes in the river catchment as a whole with the principal aims of minimising floods in the River Valley and erosion and silt wash throughout the catchment, and that active steps should be taken by the Board to promote such a scheme, in conjunction with the Thames Coromandel District Council.
- 4. Reclamations in the Harbour. For reasons discussed in this report, in particular section II Paragraph (iii) on page 3, no further reclamations should be permitted in the estuary ("Harbour") of the Tairua River, in the absence of full model studies, and the reduction of the rate of siltation through a catchment-type scheme for water and soil conservation purposes.
- 5. Structures in the harbour. The only structures that should be permitted, in or upon, the harbour are piers, jetties, wharfs and perhaps boat ramps which have been shown to be essential for public purposes, and are publicly owned.

Boat maintenance yards, for instance, should be sited where there is sufficient land available, preferably at or near the head of the main estuary, and where a slipway can be constructed which does not constitute an interference with the harbour.

The permanent mooring of relatively large vessels, in such circumstances as to cause siltation, should also be regarded as a prohibited structure.

- 6. Boat Ramps. That it be recognised that resort townships of the nature of Tairua and Pauanui need boat ramps which are both satisfactory for the purpose of launching boats, cause minimal interference with the harbour, and adjoin suitable parking areas. That not many sites meet these requirements, and that the construction of boat ramps would seem to be necessary and desirable public projects to ensure that such facilities exist, without damage to the harbour.
- 7. The environmental aspect. That it be recognised that the harbour is an amenity that can be changes both physically and environmentally by reclamation, structures, siltation, etc., and there is a need for environmental impact procedures to guard this aspect.

That planning procedures should recognise the existence and needs of the estuary and to resist the trend towards the use of harbour lands for development purposes.

8. The risk of harbour pollution.

That it be recognised that:

- The proliferation of residential subdivisions accompanied by sceptic tanks, individualised community sewerage treatment plants (package plants) and so on are a cause for grave concern for the future.
- 'Buildings', structures, etc., (including permanently moored vessels), "in" or " upon" the harbour, create near insoluble problems with respect to waste water treatment.
- There is an urgent need for a much more positive approach to this important though frustrating subject, before it is too late.

The above report was the result of a number of suggested developments for the Tairua Harbour of which the development of Pleasant Point Pauanui was one. This development involved a boat ramp and beach reclamation on the south side of Pleasant Point. There was also an earlier proposal for development of the north side of Pleasant Point.

<u>15 April 1977</u> Ministry of Transport (file 54/1470/2) wrote to Pauanui Ocean Beach Resort Ltd. Noted that they would consider both plans together. The letter expressed concern about the source of the sand for reclamation suggesting that sand removal could lead to destabilising of the adjacent area.

<u>6 May 1977</u> Simon J. Carryer Consulting Geologist, (working for Pauanui Ocean Beach Resorts Ltd) completed a survey of sediment build up in the Tairua Harbour based on aerial photography for 1944, 1966, 1971 and 1975. He summarised his findings as follows:

- 1. The lower harbour; development of banks lateral to the main channel. This had commenced in 1971 and was continuing to the present.
- 2. The central harbour; development of banks within the earlier wide channels and infilling behind the lateral banks that had developed earlier. This sedimentation had started by 1966 and was well developed by 1971, with little change to the present.
- 3. In the upper harbour; A general raising of the harbour floor, infilling behind earlier banks lateral to the channel and a closing of all but the strongest flowing channels. This pattern has developed since 1966.

Carryer considered that the progressive reduction of the tidal prism would lead to further sedimentation in the harbour and flooding of the plains during storm events and could lead to

increased instability at the harbour entrance and flooding in both Tairua and Pauanui. A second report dealing with the conditions at the Pleasant point proposed boat ramp site was completed on 19 May.

<u>13 May 1977</u> Thames Coromandel District Council wrote to Hauraki Catchment Board with a proposal for a boat club house and a one acre of land reclamation off Marys Beach with a an on-going plan for further reclamation.

<u>27 July 1977</u> Hauraki Catchment Board produced a report "The Harbour (Estuary) of the Tairua River, Various applications referred to the Board. This summarises the harbour environment then assesses the various applications for development.

<u>8 August</u> The Tairua Residents and ratepayers Association wrote to the Hauraki Catchment Board supporting the suggestion that the area owned by Pacific Paradise Marine be acquired for a public reserve and necessary utilities.

<u>6 August 1977</u> Letter by Nora Needham which covers her experiences in growing up around the Tairua estuary and her interest in future developments.

<u>19 October 1977</u> A meeting was held at the Pauanui Club. Present were Thames Coromandel District Council, Hauraki Catchment Board, Pauanui Ocean Beach resorts Limited, Pauanui Residents Association and professional advisers to the above. Underground water resources and protection of this resource, Waste water treatment, harbour shore development and inland recreational water.

<u>2 September 1977</u>. Flooding and silt deposition over the farm of P. Darrah which is located about three kilometres east of Hikuai near the confluence of Boom Creek and the Tairua River. Silt deposition was quite significant and after investigating the situation the Catchment Board officers found the source to be overburden eroded from the Whangamata Metal Supplies Quarry.

<u>23 December 1977</u> The Chief Engineer Hauraki District council wrote to the TCDC Engineer and recommended that the reclamation and boat shed proposal at Marys Beach should not go ahead but the proposed reclamation towards Pepe estuary could be possible. In response to the shortage of boat ramps he suggested that there could be one installed upstream of the existing wharf so long as it did not form a groyne and disturb sediment transport past the existing wharf and boat ramp.

<u>13 February 1978</u> Murray North and Partners place an application for reclamation of part of the Tairua Harbour on behalf of R.W. and D.P.Turner. Murray North and Partners provided the Environmental Impact Assessment. Bioresearches Limited did the biological survey of the area and concluded that there would not be any significant effects on the wider estuary. The Catchment Board replied to the Ministry of Transport quoting the decisions from the earlier Report of the Harbour of the Tairua River, noting that the recommendations are applicable to all other east coast Coromandel Peninsula Harbours - Whangamata, Wharekawa, Whitianga and Whangapoua.

The recommendations are;

- 1. That the stability of the estuary is fundamental to the residential and industrial developments of the twin towns of Tairua and Pauanui.
- 2. Siltation is continuing with the inevitable result of reduced tidal prisms which will effect flood levels
- 3. There is need for a Tairua Catchment Scheme for the purpose of managing the catchment and minimising floods and silt was throughout the catchment.

- 4. No further reclamations are to be permitted until catchment model is available.
- 5. The only structures that should be permitted are piers, jetties, wharfs and perhaps boat ramps where they have been shown to be essential for public purposes and are publicly owned.
- 6. Boat Ramps are needed in resort townships like Tairua and Pauanui for the purpose of launching boats. These structures must have minimal effect on the harbour and be adjacent to adequate parking areas.
- 7. The environmental aspects. Need to recognise that reclamation can have an effect on siltation and erosion within the estuary and need environmental impact assessments to guard against adverse effects.
- 8. The risk of harbour pollution. Proliferation of housing with septic tanks, or community sewage treatment (package plants) are a cause of grave concern for the future. Buildings, structures including permanently moored vessels "in" or "on" the harbour create near insoluble problems with respect to waste water.

<u>April 1978</u> Murray-North Partners submitted a revised proposal based on advice from the Ministry of Transport. End of file

2/3/121000-124000 (Vol 1) Tairua Area Catchments 1967-1978. Start of file 2/3/121000-124000 (Vol 2) 1978-1980.

File commences with a report titled Tairua River Discharge Investigation dated March 1976. This report demonstrates the minimal information about early floods and sedimentation events that existed in the catchment before 1975. The RE Paeroa reviewed the flood report 3 May 1978.

Early <u>May 1978</u> there are copies of numerous supporters' submissions for the reclamation proposed for the Pepe inlet by the Turners.

<u>8 December 1976</u>. Pauanui Ocean Beach Resort Limited proposed groynes and sea grass removal. The firm apparently applied to remove the seagrass from near Pleasant Point after removing it. The groynes were to stabilise the inside of Pauanui Spit.

The resident engineer decided that only the first four groynes were needed as a trial as he considered that they would have little effect. He noted that the Catchment Board had released their formal report on the Harbour and that he agrees that there should not be any more construction in the Harbour. The construction of the boat ramp could go ahead with some modification, so it would not be a barrier to sediment transport and that a small boat channel could be constructed without having an adverse effect on the harbour.

<u>5 May 1978</u>. The Commission for the Environment wrote to Hauraki Catchment Board supporting their stance against the Turners proposed reclamation.

<u>17 May 1978.</u> Hauraki Catchment Board formally notifies both Turners and Murray North that they will not approve the proposed reclamation.

<u>7 August 1978</u> The Hamilton Ministry of Works DCW writes to Hauraki Catchment Board referring to the TCDC Scheme Plan (K3/10/103) to subdivide the dunes backing Ocean Beach Tairua. He requests that the Engineer examine the document to ensure that the conditions will safeguard the dune area where the subdivision is proposed.

<u>9 September 1978</u>. The manager of Slipper Island Resorts wrote to Hauraki Catchment Board stating that she had climbed Paku trig and noted that there was severe erosion at the northern end of Pauanui Spit.

<u>6 July 1978</u>. Ministry of Transport wrote to Hauraki Catchment Board enquiring about the progress with the proposal for reclamation and the construction of a Boat Ramp at Pleasant Point adjacent the area owned by Pauanui Ocean Beach Resort Ltd.

<u>25 September 1978</u> The Chief Engineer Hauraki Catchment Board wrote to the Coromandel District Council agreeing that a second boat ramp would be good for reducing the pressure on the Royal Billy Point ramp. However, he thought that there would be a need for dredging a channel to the new boat ramp site and that this would need to be maintained. The proposal to place the tailings near the mean high water mark and above was not supported as it was thought that wave action would soon remove the sediment back into the harbour. Like-wise the foreshore stabilisation proposal using 7 m long timber groynes at 100m intervals did not seem able to provide a counter to wave action. He notes that the coast has eroded 30 m between 1895 and 1965 indicating exposure to wave action. The proposed housing set back was also considered too short with most of the area 40 m and as little as 20 m in some places. This was considered too small because of the history of erosion in the area. He also considered that a legal decision of setback limits at Matarangi should have been taken into account with this development.

<u>27 October 1978.</u> Thames Coromandel District Council wrote to the Catchment Board requesting information of the proposal to place stop banks along the frontage of the Manaia Road properties that had been threatened by the storms of the winter of 1978.

<u>5 December 1978</u> Board stated that design work had not started at that point.

<u>21 December 1978</u> Catchment Board wrote to CTDC that there was a need to deepen the boat channel at Royal Billy Point to ensure the Coastguard could launch at all stages of the tide. He suggested that deepening of the channel be confined so that there would be minimal disturbance of the adjacent sand banks.

<u>11 April 1979</u>. The proposed beach frontage protection for Manaia Road properties was forwarded to TCDC from the Catchment Board. The proposal was for a structure 0.6 m high with a 3m wide crest with 3:1 batters to be placed approximately 3 m in front of the property boundaries. This was done to leave room for future coastal erosion that could occur. The structure was to be grassed with kikuyu and Indian doab. The number of storm water outlets to be kept to a minimum to prevent coastal erosion at the discharge points. Levels referred to in the plans are based on the Ministry of Works and Development on a bench mark on the Tairua Wharf. The level of the stopbank is thus set at 13.4 m based on the flood level of 13.1 m on the tide gauge at the Tairua Wharf. Estimated cost \$17,422.50. Residents objected to the stop bank being too close to the properties and storm water from Hornsea Road drains through the outlet to the estuary and has a tendency to flood properties during heavy rain. Residents felt that the proximity of the bank would exacerbate flooding.

<u>2 May 1979</u> TCDC confirm that they are willing to pay for the stop bank at estimated cost of \$18,000 and with a \$1 for \$1 subsidy. Residents have indicated a willingness to pay their share.

<u>11 May 1979</u> A lawyer's letter was sent to TCDC on behalf of a Mr Marshall who was convinced that the silting of the harbour and the presence of the bar at the harbour entrance was responsible for the flooding in 1978 along Manaia Road and that the stop bank would only make flooding on his section greater. The letter asked for further information for the basis of the proposed construction.

<u>12 June 1979</u> Thames Coromandel DC wrote to the Catchment Board suggesting that the proposed setback distances near the proposed Pleasant Point boat ramp were inadequate.

<u>June 1979</u>. Undated draft letter permitting Tanner sawmills to excavate 600 m³ shingle from Tairua River from two locations (opposite Oveson's farm cowshed and near the junction of the "forth branch"). No further details on file.

<u>7 June 1979</u> Thames Coromandel District Council (Tairua Harbour) Vesting and empowering Bill.

Health Department letter; The continued growth of Tairua population together with the development of Pauanui led to a need for a sewage treatment plant. This letter supports the Bill as this is necessary as part of the development of the treatment plant.

Lands and Survey Department supports the reclamation of a small bay on the edge of the estuary to develop the treatment plant together with a recreation reserve on the estuary side of the reclamation. Lands and Survey Department also questioned why there had been no Environmental assessment or report included in the proposal. Internal Affairs Department supported the proposal but suggested limitations being placed on future reclamation without further consent. Tairua Residents were worried that the Council would use the Empowering act to carry out reclamations without environmental impact assessments.

<u>16 August 1979</u>. Mrs Needham wrote to the Catchment Board expressing concern about the potential damage to the estuary of the proposed treatment plant and a pipeline across the harbour that was being constructed even though the empowering Bill had not been passed.

<u>25 June 1979</u> Thames Coromandel DC wrote to the Catchment Board explaining the proposed Pleasant Point development.

- the council was prepared to authorise the boat ramp.
- reshape and re-contour the land above mean high water. Dredge tailings to be used to fill in swampy areas.
- foreshore stabilisation using wooden groynes. Recognised that the structures may have little effect on erosion and therefore care would be needed establishing as suitable reserve width.
- setback distances on the earlier plan are out dated and a new set will be submitted in due course.

<u>11 July 1979</u> Ministry of Agriculture and fisheries made a submission that the estuary was an important nursery area for the local fishery and that the proposed reclamation was likely to have a deleterious effect on the estuarine ecology.

From July to November 1979 the file contains a number of letters to various government departments, the Ombudsman and to the Parliamentary committee considering the Empowerment Bill, requesting that it not be proceeded with because of the ecological damage to the estuary.

<u>20 November 1979</u> Letter to Mr J. P. Marshall's lawyers noting that the proposed works on the Manaia stop bank does not need a water right.

<u>20 November 1979</u> Catchment Board wrote to TCDC explaining the value of having a water right to ensure the smooth running of the Manaia Road stop bank.

<u>23 April 1980</u> The Catchment Board and TCDC wanting to negotiate a lower price for the Mania Road Stop bank. Lowest quote was over \$7,000 more than estimate. The contract prices were rejected and the work was to be done on an hourly rate using local contractors.

<u>14 May 1980</u>. Mrs Deane questions an apparent attempt to carry out reclamation in the Pepe Estuary. The Board replied on 23 May stating that there was no approval for any reclamations in the Pepe estuary.

<u>21 June 1980</u> Mrs N. Needham writing on behalf of the Tairua Environmental group was enquiring about a proposal in the TCDC March minutes referring to a proposal to dredge sand from Tairua Harbour.

<u>28 June 1980</u> Mrs N. Needham contacted the television programme "Top Half" requesting that they investigate the proposal to mine sand from Tairua estuary. However, she was also wanting to bring pressure to bear on the Council to return some land that had been taken for the Pauanui sewage scheme because it also removed their stock water supply.

<u>28 June 1980</u> Mrs Needham noted that earthworks were being carried out near Pleasant Point and wrote to the Hauraki Catchment Board to establish what was going on. She then contacted TCDC and was told the boat ramp was being constructed by Pauanui locals and was to remain a public asset. No public money was being used.

The letter concludes with a list of points of concern:

- The boat ramp too far from the deep channel.
- There is already a natural ramp in use at the ski lane.
- Small children use the area for paddling and bathing.
- Any change or alteration in the area will result in a change or alteration to the existing conditions
- The tidal balance around the reef could be altered.
- The spit at Pleasant point could be altered.
- A built up of sand is inevitable.
- The existing ramp at the point has led to erosion and local deepening of the channel. This development could cause scouring and deposition of the main channel.
- There has already been substantial cutting back of the point where the subdividers removed huge quantities of sand from the dunes two years ago.
- The reclamation would increase the distance of the subdivision from 60 m to 100m.
- The dredged channel could form the outlet for a marina on the subdivision later.
- The second boat ramp is not needed.
- Our 58 foot scow uses this area to load and unload stock from Slipper Island and any changes could prevent this.
- TCDC has shown considerable hostility to us beach the scow there.
- Farming is a primary industry and we are entitled to be considered.
- There is nothing wrong with the beach the way it is.
- The MHWM has not been proved by the Lands and Survey. All surveying has been done by the developers and there is a discrepancy of 18 inches between the developers pegs and our surveys pegs south of the (sewage) pond.
- The subdivider applied to the Council to extend his boundary out on to the flattened sand dunes because "a too wide reserve was not in the public interest". The additional land was added to the sections and sold for up to \$45,000 each.
- Any changes to the harbour will be opposed by the Tairua Harbour and Estuary Protection Group.
- One reclamation leads to another and we do not want to see any reclamations in the harbour.

She notes that there was supposed to be a large deposit of sea grass on the sand banks and that Mr Hopper was using a scraper to remove it. She thought this was a cover for digging the channels deeper as there had never been a deposit of sea grass that needed machinery to remove it before. Also noted that aerial photographs showed that scraper tracks were near channels. End of file.