Land Subsidence and the Reservoirs of the Washburn Valley

Andrew McTominey

Summary

This short article explores the effects of water management on the transformation of landscape by highlighting the role the reservoirs of the Washburn Valley, which service Leeds, West Yorkshire, played in the subsidence of Fewston village, which lies in the valley.

Water management can have profound effects upon the landscape. The proliferation of dam building in Britain, particularly during the nineteenth century as towns and cities sought pure water for growing populations, saw municipal waterworks and private water companies move further into the countryside, such as Manchester's Thirlmere Reservoir in the Lake District or Liverpool's Vyrnwy Reservoir in North Wales. As reservoirs were built, they altered the natural landscape. Whilst this process has been examined by environmental and urban historians in more famous sites of natural beauty such as the Lake District, the Washburn Valley, which hosts the four main service reservoirs for Leeds built between 1866 and 1966, has been overlooked. The three reservoirs in the lower valley, Lindley Wood, Swinsty, and Fewston, were built between 1869 and 1879; the fourth reservoir, Thruscross, was not built until 1966 due to financial difficulties. Not only did the building of these reservoirs profoundly impact the social make-up of the valley and the way the valley has become culturally represented, they also affected the physical landscape itself. Eric Swyngedouw's term "socionature" is applicable, because the Leeds Corporation, as the owner of the reservoirs, worked in tandem with nature in order to alter and form the amended landscape, seeing the natural environment as a resource through which it could service its urban population. One example of this change in particular is the subsidence of Fewston village.

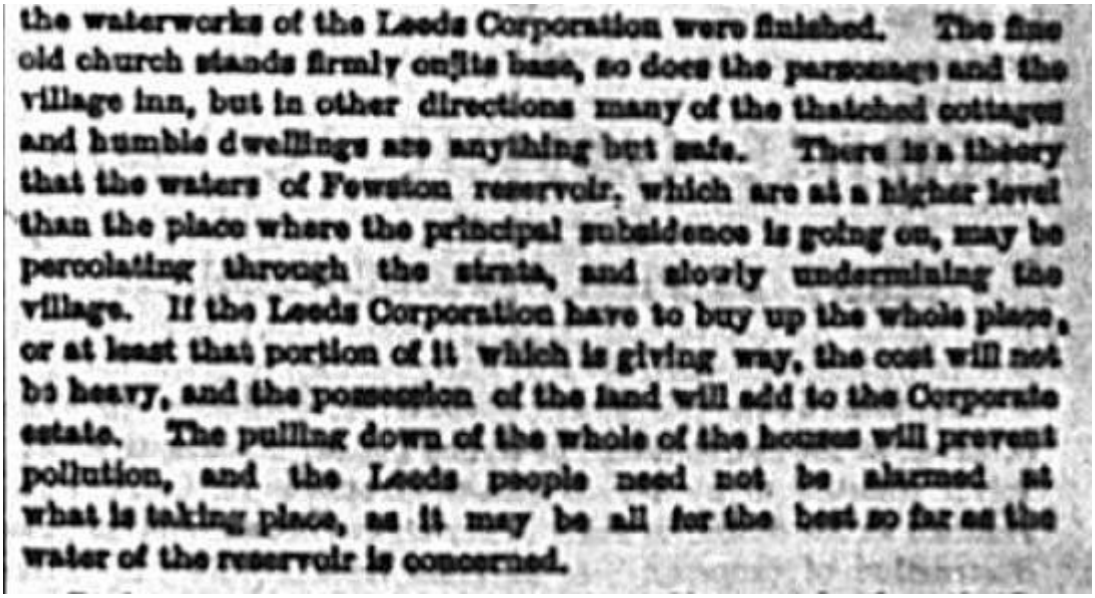
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Swinsty Reservoir, on the banks of which Fewston village lies.

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the waterworks of the Leeds Corporation were finished. The fine old church stands firmly on its base, so does the parsonage and the village inn, but in other directions many of the thatched cottages and humble dwellings are anything but safe. There is a theory that the waters of Fewston reservoir, which are at a higher level than the place where the principal subsidence is going on, may be percolating through the strata, and slowly undermining the village. If the Leeds Corporation have to buy up the whole place, or at least that portion of it which is giving way, the cost will not be heavy, and the possession of the land will add to the Corporate estate. The pulling down of the whole of the houses will prevent pollution, and the Leeds people need not be alarmed at what is taking place, as it may be all for the best so far as the water of the reservoir is concerned.

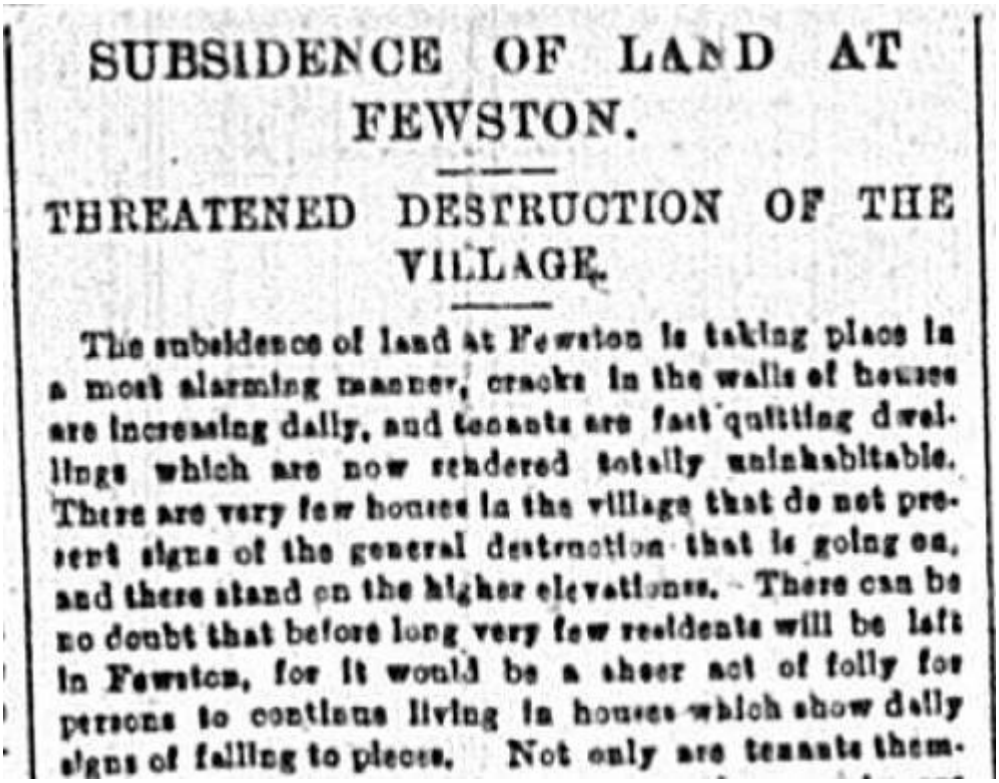
An article by regular columnist "The Owl" from the radical *Leeds Times* newspaper, advocating that the Leeds Corporation should purchase the subsiding land. Taken from *Leeds Times*, 25 September 1880, 4.

The newspaper is held by the Local and Family History Library, Leeds Central Library, where it was copied from the microfilm. This article can also be found on the website of the British Newspaper Archive . (Paywall)

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Following the general trend from the mid-nineteenth century onwards, water came under municipal control after the Leeds Corporation's purchase of the Leeds Water Company in 1853. Due to a lack of water for domestic and industrial purposes, the Leeds Corporation looked to the Washburn Valley for an enlarged catchment. Fewston village lies on the edge of Swinsty Reservoir, the second of three reservoirs to be built in the valley. Because of the use of gravitation in the reservoir system, the third reservoir, Fewston, lies slightly above the village. When full, the combined storage capacity is approximately 8.2 billion liters (1.8 billion imperial gallons) of water, generating a huge amount of pressure on the land. Whilst the reservoirs were constructed with puddled clay to make them watertight, the landscape on which they were built consisted of shale, and therefore did not provide the strongest foundation. Indeed, there were several landslides during the construction of Fewston Reservoir that the chief engineer, Edward Filliter, had to manage. Fewston village was built upon the same shale base, and had been prone to landslides throughout its history. On 17 September 1880, one year after the completion of the reservoir, provincial newspapers reported that residents awoke to large cracks running up the walls of their houses, which left the majority of houses in the village uninhabitable. One resident, Mrs Greaves, reported that all the floors in her home had given way. Several newspapers, such as the *Leeds Mercury*, reported that cracks in the land owned by the vicar of the parish were wide enough for cattle to fall in and break their legs. Even the dead could not escape, with the churchyard similarly affected.



SUBSIDENCE OF LAND AT FEWSTON.

THREATENED DESTRUCTION OF THE VILLAGE.

The subsidence of land at Fewston is taking place in a most alarming manner, cracks in the walls of houses are increasing daily, and tenants are fast quitting dwellings which are now rendered totally uninhabitable. There are very few houses in the village that do not present signs of the general destruction that is going on, and these stand on the higher elevations. There can be no doubt that before long very few residents will be left in Fewston, for it would be a sheer act of folly for persons to continue living in houses which show daily signs of falling to pieces. Not only are tenants them-

An article on the subsidence of land at Fewston, taken from *The Yorkshire Post and Leeds Intelligencer*, 24 September 1880, 5.

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Popular opinion, expressed by residents and provincial newspapers, pointed to the presence of the reservoirs. *The Yorkshire Post and Leeds Intelligencer* blamed the high pressure of Swinsty Reservoir, which had forced water

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through the shaly strata of the village foundation, loosening the shale and removing it as the pressure dropped, which caused the village to subside. Residents supported this theory, in part due to the recent completion of the reservoir, but also because of the prospect of compensation from the Leeds Corporation. The Corporation, however, did not accept this criticism. A report, commissioned by its Waterworks Committee, by the geologist Professor Henry Alexander Green of Yorkshire College, found that the reservoirs were in no way responsible for the subsidence. The report argued that due to the shale foundation "[t]he landslips at Fewston have therefore on former occasions given proof of their habit of periodically sliding." This explanation, from an expert witness, gave the Corporation the evidence they needed to not pay compensation to Fewston's residents.



An Ordnance Survey map of the lower half of the Washburn Valley from 1893, with Lindley Wood (1869–75) in the middle, Swinsty (1870–77) in the top left corner, and the bottom of Fewston (1875–79) cut off in the top left corner.

Creator: Ordnance Survey Office
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Whilst the land on which the village was built was prone to subsidence, the presence of the reservoirs could not have been just a coincidence. The timing and severity of the subsidence suggests that the reservoirs were an active factor for the damage to the village. This highlights a change in power relations, further emphasized by compulsory land purchases by the Corporation in the valley in the subsequent two decades. The actions of the Corporation, in leaving residents of the valley with unsafe housing, meant that Fewston village became largely deserted, altering not just the landscape but the social structure of the valley. The subsidence was a socionatural

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process, as the forces of nature and society worked to produce a landscape that was unfit for residents. The departure of residents because of the damage to their properties was a further socionatural event, leaving the village largely deserted, which was a result of reservoirs being built on unstable land without the engineering knowledge to do so safely at this time. This event highlights how the processes of water management can irrevocably affect the rural environment.



The dry by-wash at Swinsty, which allows water to flow down the valley to Lindley Wood Reservoir by means of gravitation.

Photo taken by Andrew McTominey, 2016.

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About the author:

Andrew McTominey
Andrew McTominey is a PhD student at Leeds Beckett University and the University of Huddersfield, funded by the AHRC Heritage Consortium. His research focuses on the reservoirs in the Washburn Valley, which service the city of Leeds, and the social and cultural impact of their construction upon the area. This includes examining the effects of urban governance, landscape transformation, leisure, and how the reservoirs are used in the present as a site of heritage.
https://orcid.org/0000-0003-2259-6178