APPENDIX C SLUDGE DISPOSAL

Feasible Areas

Two general types of areas have been considered as possibilities for sludge disposal. They are abandoned deep mines and abandoned strip mines. Both types of areas are suitable for sludge disposal with certain limitations. A discussion of each type of area has been covered separately in the following paragraphs of this appendix.

Only a small section of the proposed deep mine sludge disposal area is owned or controlled by the Altoona City Authority and none of the abandoned strip mine sludge disposal area is owned or controlled by the Altoona City Authority.

Abandoned Deep Mines

The region along the Allegheny Front, several miles west of the proposed water treatment plant site, has been extensively deep mined in several seams. This mining activity started about 1870 and had its high production years from the early 1900's to about 1950. Since then, most of the deep mining activity has been small mines working primarily in pillar extraction.

The largest abandoned deep mine area is situated in the Upper Freeport or E Seam. This complex consists of 17.6 square miles of mined out areas extending from Cresson in the South to Amsbry at the North end. This complex contains the workings of eleven large mining operations and numerous small operations. The deep mine maps of this area indicate the various mining operations are interconnected via of cut-throughs in the barrier pillars.

The structure contour elevations on the coal seam in this complex vary from 2400 feet at the outcrop along the Allegheny Front to 1700 feet in the Amsbry area. The coal seam has an average dip of 4.5% to the northwest in the complex.

It is not possible or feasible to utilize all 17.6 square miles for sludge disposal; however, there should be several large areas in this complex that would be suitable as a disposal area. One such area under consideration would have its discharge point into the deep mine at a location approximately 3 miles N 70° W of the proposed treatment site. This location would require about 17,000 lineal feet of pipe line from the treatment plant to the discharge point and at an increase in elevation of approximately 850 feet.

There are several other abandoned deep mine areas in the Brookville (A) seam and the lower Kittanning (B) seam which have possibilities for sludge disposal. None of these mines, however, are as extensive in area as the complex in the E seam.

Prior to establishing an abandoned deep mine sludge disposal area, an extensive drilling program in addition to the utilization of a bore hole camera survey should be performed to estimate capacities of the proposed impoundments and underground drainage patterns.

Abandoned Strip Mines

The applicable area along the Allegheny Front west of the proposed treatment plant site contains affected areas by strip mining in excess of 1000 acres. Strip mining in this area started in the late 1920's or early 1930's and had its high production years during the 1940's and early 1950's. Strip mining operations were performed in the Brookville (A) seam, Clarion (A') seam, Scrubgrass seam, Lower Kittanning (B) seam, Middle Kittanning (C) seam, Upper Kittanning (C') seam, Lower Freeport (D) seam and Upper Freeport (E) seam. Although this strip mining was primarily for coal, a large quantity of fire clay (estimated 2 million tons) has also been mined in the applicable area. To the best of our knowledge, there is presently only one active stripping operation in the area; this is a strip mining operation in the Brookville fire clay seam.

The effected areas have various types of restoration ranging from approximate original contour to terrace backfill under the present law to terrace backfill under the old laws to virtually no restoration. There are several abandoned strip pits which would lend themselves for sludge disposal. Generally, these are abandoned pits which have had either little or no restoration or terraced restoration as defined under the old law. Sludge disposal in the abandoned strip pits would have the advantage of visual control. Also, the impoundment in strip pits will have a far greater capacity per area than in the deep mines due to the utilization of the greater heights available in the strip pits. The length of pipe line and rise in elevation will be approximately the same for either deep mine or strip mine sludge disposal areas. The individual

strip pits that could be utilized for sludge disposal will generally have smaller incremental capacities than those of deep mines, thus the discharge point of the sludge disposal system would have to be changed more frequently for the strip mine disposal areas.