



Report

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Accelerated Erosion: It's Prevention and Cure

Natural erosion occurs everywhere to some degree. It is the result of an equation out of balance. Using the force of gravity, nature attempts to make the earth a smooth sphere (both above and below water level), and bring the equation into balance.

In most cases, erosion is a slow process requiring thousands of years to show appreciable results.

Man has greatly accelerated this process. He removes vegetation and disturbs soil cohesiveness that retard erosion.

In this manner, man can accomplish in a few years what nature requires centuries to do. This is accelerated erosion, and it is destructive to man.

Accelerated Soil Erosion may be defined as the resultant when uncontrolled water flows over unprotected land. This definition brings into clear account the two vital concepts that must be understood to protect against excessive soil erosion during man's land use activities.

Sediments, a result of soil erosion, cause damages in the following ways:

- clog streams, navigable waterways and increase flood levels
- fill reservoirs and dams destroying their usefulness
- destroy rich top soils that take nature approximately 1000 years to develop
- increase turbidity and temperature and thus decrease oxygen in streams, harming stream life
- carry pesticides, bacteria and other harmful agents
- increase the cost of reclaiming water for industrial and commercial uses
- finally, sedimentation is unsightly and detracts from the quality of the environment.

had massive and destructive flooding, complicated and made more destructive by stream clogging sedimentation.

The purpose of this article is to clearly show the relationships that deal with erosion and sedimentation. To clearly understand the reason for erosion is, of course, the necessary first step to preventing erosion. This article is not intended to be all inclusive, it is only meant to make clear the essentials.

Hereafter is an identification of important elements in the erosion-silt-sedimentation process. It begins with the vehicles of erosion.

THE VEHICLE

Vehicle: a means of carrying or transporting something.

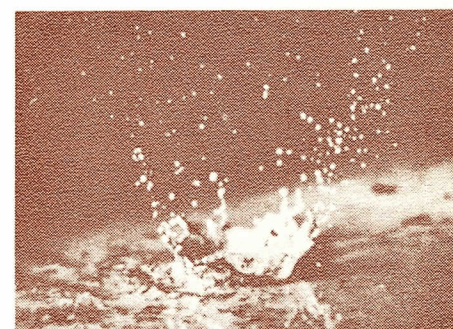
In the world, there are three major vehicles attempting to level the earth to a flat peneplain. These are the wind, the rain and ice. They are taking from the high and placing in the low—all using the motivating force, gravity.

The first and the last are of no consequence in the Turtle Creek watershed. Their erosive action is most important in the western and the northern portions of the North American continent.

In southwestern Pennsylvania, water is the erosive vehicle. Its mechanics are easily understood. The greater the local elevation (hilltop to stream bed) the higher the velocities it is likely to attain; the higher the velocity attained, the greater the erosive potential and the greater the sediment carrying capacity.

A basic equation shows interesting implications:

$$C = V \times F \quad \text{where} \quad \begin{array}{l} C = \text{the carrying capacity} \\ \text{of the water} \\ V = \text{the velocity of the} \\ \text{water} \\ F = \text{the quantity of flow} \end{array}$$



Raindrops strike with enough force to tear clumps of unprotected soil apart. If these minute particles are then affected by flowing water, they become sediments and may be carried long distances. Massive sheet erosion begins in this manner.

The important factor that should be remembered is the multiple sign. The capacity of water to carry sediments (and to erode) does not increase in a linear fashion; it increases by a multiple!

Thus, large flows of water moving at high speeds multiply their effect over low, slow streams, and the results are often devastating.

Not only is the carrying capacity of that water increased enormously, but the "C" may also stand for cutting ability. Gullies, large rills and massive sheet erosion are evidenced where unprotected sloped land is affected by heavy downpours.

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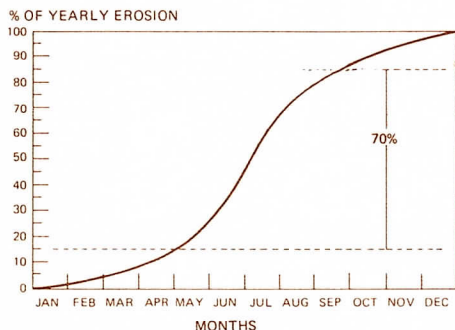
It is common knowledge that the Turtle Creek watershed has continually

CRITICAL EROSION PERIOD

Heavy downpours, often caused by thundershower activity and usually of short duration, are the main culprits. They produce extremely high flows.

Because of this, the period of greatest concern is between May 1 and September 1 in southwestern Pennsylvania.

Soil Conservation Service (SCS) statistics show that approximately 70% of our erosion occurs during this four month period. Construction activity is greatest at this period, also.



The period of greatest erosion concern, as shown in the graph by the steep rise in the "S" curve, is between May and September.

Although the fall and winter rains are of longer duration, they are usually gentle rains and do not produce the extremely high flows of spring and summer downpours.

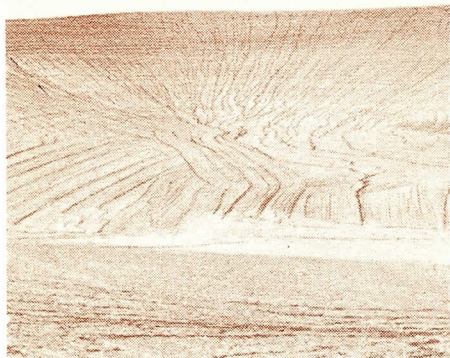
The implications for preventing erosion during construction are clear. Control devices must be instituted as land clearing progresses, particularly in the critical months.

The large flows must not be allowed to traverse unprotected soil at high speeds. Otherwise damages will occur both on-site and to Commonwealth streams.

EROSION TYPES

There are three basic classifications of accelerated erosion.

Sheet Erosion occurs on newly graded slopes and is the first stage of erosion. It also is the type that produces



Hillside Sheet Erosion

the largest tonnage per acre when associated with "rill" erosion.

Sheet erosion can be characterized as general erosion over a large area where whole layers of soil are removed. It is most prevalent on long, steep slopes that have been recently denuded.

Calculations can be made to determine tonnage lost per acre by knowing the following:

1. length of slope
2. percent gradient of slope
3. rainfall (flow) factor
4. cover factor (vegetation still remaining)
5. soil stability

Therefore, long steep slopes (greater than 15%), having unstable soils, no flow diversion devices, and little cover are most liable to erode.

Note: Soil erodability factors have been determined by the SCS for all areas of Allegheny and Westmoreland Counties including the entire Turtle Creek Watershed. It is based on the structure of each soil association as it pertains to resisting erosion.

Rill Erosion is the next form in the degeneration of an eroding area. Here the water has been diverted into small gullies and you can now perceive distinct channels. Since the water is now concentrated, its cutting power is increased.

Gully Erosion is the final erosion form and results when the rills have been cut into deep ravines. At this stage, the land is worthless for the use of growing any form of vegetation without extensive reformation and refertilization.

EROSION INDUCING OPERATIONS

Agriculture activity was once the primary source of sediments in the Turtle Creek area. Today, it is no longer, thanks to the good efforts of the Allegheny and Westmoreland County Conservation Districts.

Yearly averages for tonnage lost have been calculated by the SCS for farms



Rill erosion is the result when water is allowed to cut small channels on unprotected slopes. Because the water can now move very fast, the early stages of rill development is the period when the greatest erosion takes place.

using conservation methods, and for those lacking soil protection.

Treated Land: 1 to 5 tons per acre per year depending on slope;

Untreated Land: up to 40 tons per acre per year.

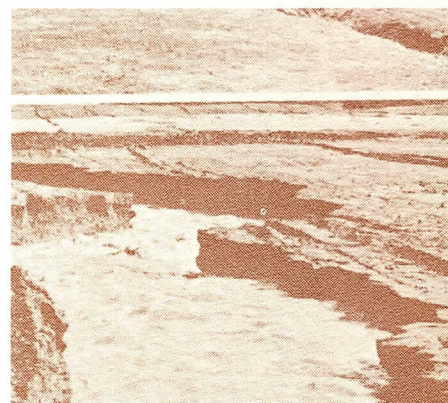
Urban Construction is by far the most pressing problem in the region. The earth, once the soil structure is destroyed by earth moving, is extremely fragile.

Included in this category are residential, commercial, industrial and public use construction.

This activity may contribute from 20 tons per acre yearly for good construction practices, up to 1000 tons where no controls are used on steep sloped land.



Sheet erosion begins to develop rills on this unprotected construction site in Braddock Hills Borough.



Once gully erosion has progressed to this point, fast moving waters have multiplied the erosive capabilities of this unprotected watercourse, causing irreparable damage.



Gully erosion is the final stage in the erosion cycle. The land is now extensively damaged.

Surface Mining is the second most important source of erosion in the watershed.

From 50 to 500 tons per acre yearly can be expected from strip mined areas. The range varies because of sloping, terracing and factors affecting the site. The greater the size of the mined fragments, the less the erosion.

CONTROLS

There are a number of guidelines for urban development (and strip mining) that can be used to minimize erosion problems. They begin with planning.

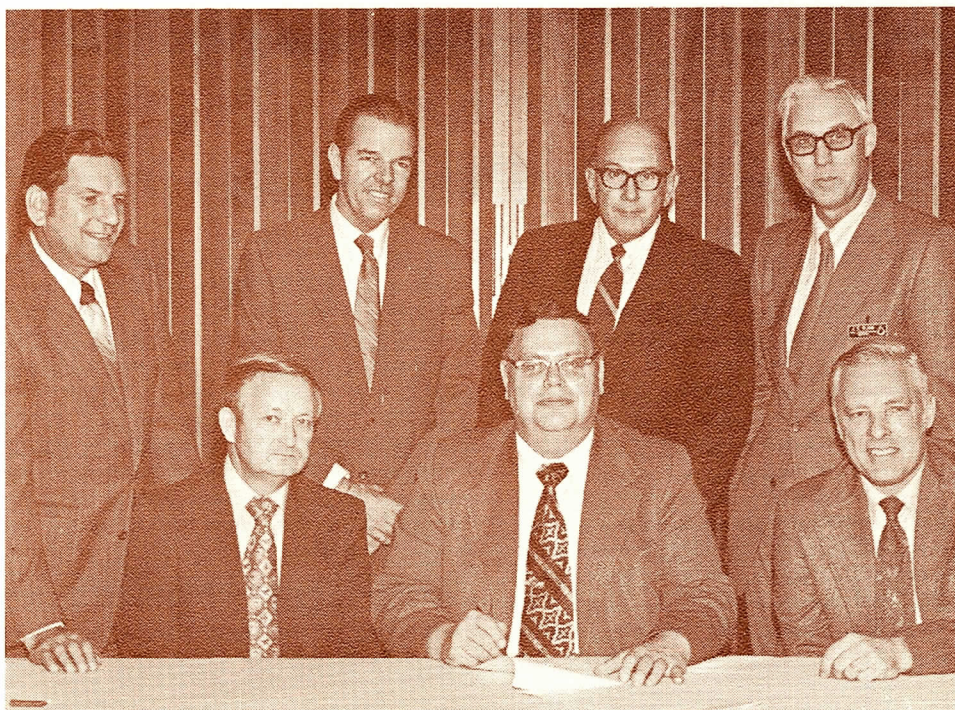
Full information on slope characteristics, soil types, and contributing drainage above site must be known to effectively devise control measures.

Thumbnail guidelines for soil containment are listed below:

- Favorable Topography - do not develop slopes greater than 15% without special design and control techniques (above and beyond those necessary for a normal site).
- Site Exposure - develop in stages; use vegetation on areas exposed for more than 20 days.
- Cut, Fills, Grading - devise site-use plans to utilize natural contours; minimize earthmoving.
- Soils - do not develop slide prone areas; unstable soils require special precautions.
- Natural Vegetation - save existing vegetation, especially trees (site values will increase as a result, also).
- Temporary Control Structures - use daily to prevent thundershower damages; use hay and wood planks as diverters to control water velocities.
- Roads and Storm Sewers - put in as soon as practical; roads usually act as effect terracing.
- Debris Basins - where possible to locate, put in before earth is disturbed for uphill development.

Note: Complete information for minimizing erosion and sediments during construction is found in the "Erosion and Sediment Control Handbook for Allegheny County, Pennsylvania."

This article is entitled "Accelerated Erosion: Its Prevention and Cure." Thus far we have only spoken of prevention. There is a reason. The only cure is money. Money spent to remove silt from our water, sediments from our streams, slides from our roads and, finally to enrich the sterile soils that are left when the fertile topsoils provided by nature are lost.



Local Conservation District continues to receive strong county support. Allegheny County Commissioner Thomas J. Foerster signs five-year agreement with the U.S. Soil Conservation Service to enlist their aid in the protection of County resources.

This action is significant to the TCWA. By Act 222 amended, all earth-moving activities after July 1, 1973 must have an erosion control plan; all sites 12 acres or larger in the Turtle Creek watershed also require a DER permit.

Left to right: William Shute, chairman of the Allegheny County Conservation District; Benny Martin, SCS State Conservationist; Dr. Frank Clack, Director of the County Health Dept.; Commissioner Foerster; John L. Schwartz, Jr., TCWA board chairman; Jim Olson, Area Conservationist, SCS; and Jud Porter, SCS.

The Conservation District (with SCS technical aid) is the primary agency charged with the processing of erosion control plans and otherwise aiding in developing good construction practices.

PennDOT Cooperates on Mossides

District 11 of PennDOT has shown "good faith" in addressing themselves to a difficult problem affecting a number of state maintained roads in the watershed.

The response was in answer to a TCWA effort to invoke new PennDOT policy on the practice of dumping loose stone, shale and other erodable materials along streamside roads in an attempt to stabilize berms.

Too often this material is carried away during high water periods, and lodges downstream where it must be dredged at high costs.

A serious problem affecting a stream adjacent to Mossides Boulevard (Route 48) between Monroeville and the main channel of Turtle Creek prompted the request for policy change.

Inspection by the TCWA, after a number of complaints, revealed a totally unsatisfactory method of stabilizing the berm of Route 48 by dumping potentially erodable material along the bank.

High waters had indeed moved the fill. Sediments had almost completely clogged the underpassage of a bridge carrying Routes 180 and 993 between Pitcairn and Trafford. Residents told of

times past when the stream had actually flowed over the road.

On notification, PennDOT District Engineer, Anthony J. Gaeta promptly called a meeting of all of his Supervisors who are responsible for maintenance operations.

Gaeta related, "All of the Foremen have been advised that they are to discontinue the practice of dumping stone, shale or other material onto the shoulder of a highway where there is danger of erosion and the siltation of stream channels."

He continues, "The Supervisors were instructed to obtain reconstruction plans and the necessary permits from environmental agencies before any work is performed in or adjacent to a stream channel."

Elsewhere in the watershed PennDOT is doing a commendable job. In particular, their efforts on the Tri-Boro Expressway, and the good use of sediment ponds here are a prime example of excellent highway construction.

In this difficult cut and fill operation, with precipitous cuts necessary in a narrow valley, there has been no evidence of sediments getting into Turtle Creek.

DER Contract to Complete Mine Acid Survey

The TCWA and state Department of Environmental Resources (DER) recently agreed on a contract to complete the survey of mine problems in the Turtle Creek watershed.

Last year the TCWA surveyed the 40 square mile Irwin Syncline area in Westmoreland County, the primary geological source-area of mine acid in the watershed.

Identified were acid discharge points, unreclaimed stripped areas, water ingress points, hazardous old portals and shafts, as well as other pertinent mine data needed for reclamation.

TCWA action this year will be to locate similar problems throughout the remainder of the 147 square mile watershed. Nearly all of the mined-out areas to be studied are in Allegheny County.

Unlike the Irwin areas which held a nearly continuous section of Pittsburgh Coal, the areas having mine problems in Allegheny County are highly discontinuous, usually high on hilltops and ridges, where the Pittsburgh Coal had not been eroded away.



Pittsburgh Coal Outcrop adjacent to a small stream. Locations such as this, where the coal has been mined, offer opportunities for pure surface water to get into old workings and become mine acid. All of the watershed's coal outcroppings in Allegheny County will be surveyed for problems by TCWA this summer.

The coal here was "up-dip" mined which allowed mine water to flow freely out of the old workings. Today, the flow of surface water into and out of these old mines continues unabated. The result is

the mine acid in evidence in many streams in Penn Hills, Plum and Monroeville Boroughs.

John L. Schwartz, TCWA Chairman, states that primary emphasis will be placed on the old workings of the Oak Hill No. 4 Mine in Monroeville and Turtle Creek, the Oak Hill No. 5 mine in Plum, the Sandy Creek Mine in Penn Hills and Wilkens, and the Plum Creek Mine in Penn Hills.

The study and report is designed to prompt "Quick Start" reclamation projects by the state.

The contract also calls for a stream sampling program to monitor effects of reclamation on water quality. TCWA will collect the samples and send them to state laboratories where they will then be processed.

Reclamation Starts on Coal Run

State contracts for a number of "Quick Start" projects on Coal Run near Irwin are being allocated. The Department of Environmental Resources (DER) expects construction to begin by mid June of this year.

Four portals and water ingress points into deep mines are slated to be concrete sealed. They will then be covered so that surface waters are channeled away from the sites.

Also, a major mine drainage outfall will be sealed. This outfall has recently caused local flooding over the Irwin-Paintertown road and has closed the road on a number of occasions.

Channeling of Coal Run, just downstream of Paintertown, will also be accomplished for approximately 1600 feet. This section was once stripped and was not properly backfilled after the completion of mining. This has resulted in a bog which allows the stream water to seep into deep mine workings causing mine acid drainage.

Providing proper drainage by channeling should carry the surface waters safely over these stripped out areas.



Channeling will safely carry surface water over this stripped area.

No costs are presently available on the projects, but all are expected to be completed by October, 1973.



Discharge point to be sealed.



Sealing of portals and other mine reclamation on Coal Run (near Irwin) began in June, 1973.

White Valley—Delmont Engineering Completed

Wright Engineers of Valencia, Pa. report that engineering construction plans for channeling, surface sealing and reclaiming of strip pits in the area covered by their DER contract are complete.

All of the engineering is designed to decrease acid flows to Turtle Creek. In the process, there will be some reclamation of stripped land.

Chief Engineer, George R. Wright, states that five Quick Start projects, requiring an expenditure of perhaps \$50,000, are ready to be "let" to contractors who will do the work.

It is expected that DER will include these projects in their statewide program and assign the contracts in the Fall of this year.

Wright also informed TCWA that specifications for drilling up to 23 bore holes in the Export-White Valley area are complete.

The purpose of these holes is to determine underground conditions such as water flows, acid reservoirs, and coal barriers still in place. Wright says, "although we have been able to obtain most of the old mine maps, we are not sure of their accuracy, nor are we sure if the coal barriers shown are still unbroken."

Since this information is vital prior to determining whether the mines can or cannot be sealed, the state has requested and obtained the specifications necessary to start the drilling operations.



Export Mine Drainage. Determination of underground mine water flows and coal barriers in place will soon be identified by a State financed bore-hole project. This information is vital for choosing best abatement procedures available.

State Zeros-In on Watershed Erosion

The Turtle Creek watershed has become one of the first areas in the State named as a "special area" for soil erosion control under new sections of the State's Clean Streams Law.

As a result of a December, 1972 request by TCWA, the Department of Environmental Resources (DER) has lowered the acreage requiring a DER permit to 12 acres in the watershed, down from 25 acres which is the standard for the state elsewhere.

Recognizing the critical erosion problems in the area, Dr. Maurice K. Goddard, DER Secretary, acted quickly on the TCWA petition.

The new standard requires construction sites of 12 acres or larger to obtain approval of a complete erosion control plan prior to the start of earthmoving. July 1, 1973 is the effective date of this section of the regulations.



Unseeded construction site shows quick way to get sheet erosion into Commonwealth streams: leave catchbasins unprotected. Bales of hay around this drop inlet would adequately keep sediments from entering the storm sewer system.

After that time, land developers starting new construction must contact the Allegheny County Conservation District, or if the construction is in Westmoreland County, the Westmoreland County Conservation District for information on plan requirements and processing.

The TCWA offers its aid to construction personnel and anyone moving earth in understanding the new regulations, where the 12 acre demarcation is in effect, and other aspects of the Clean Streams Law.



Clean Streams Law (Act 222) covers practices such as this emanating from Monroeville Mall site, long a massive contributor of sediments to Thompson Run and Turtle Creek.

If there are any questions, please contact John M. Mores, TCWA executive director, at 246-2433 for information (or referral to the appropriate agency that is handling the new regulations).

Irwin Syncline Study Spec's Ready

The Department of Environmental Resources (DER) has completed requirements for an engineering study on the Irwin Syncline basin.

Purpose of the project is to determine conceptual plans for in-mine sealing, and other abatement alternatives that might be available to handle the 8.5 million gallons per day Irwin mine acid discharge.

Handling an outfall of this size is no small effort. It can be expected that surface sealing of openings, in-mine sealing of passageways and, perhaps, treatment of the decreased flows at Irwin may be necessary.

Costs of the investigation are not

available from DER at this time. TCWA, after consultation with a number of local engineering firms, estimates a cost in the neighborhood of \$75,000.

All of the 40 square mile syncline will be included for consideration except for areas already in engineering design near White Valley and along Coal Run.

July 1, 1973 is the date that DER is aiming for to assign the project to a consultant engineer. Reports indicate that Swindell-Dressler Company will be the likely choice.

The study's conclusions should recommend a course of action to abate or minimize the Irwin Syncline mine drainage.

TAL PROBLEMS ENVIRONMENTAL PROBLEMS

Stream Clean-Up

Trash, debris, old shopping carts, garbage cans and worn out tires: what do they have in common? Simple enough a question to answer!

They are many times found indiscriminately strewn along the banks and in the streams throughout areas of Allegheny and Westmoreland Counties (and elsewhere) by people of little conscience.

Attempts are being made along Turtle Creek to challenge these environmentally deteriorating practices.

Boy scouts and girl scouts, civic associations, jaycees, school and church groups have all gotten involved. They were part of the stream clean-up campaign totaling 183 people who worked on May 12 to clean-up and improve stream conditions along 48 miles of Turtle Creek and Haymaker Run.

Twenty-two groups and many private individuals participated. Three trucks, two from Franklin Township and one from Export Borough, hauled the collected trash to sanitary landfills.

The project was the result of TCWA efforts to involve local citizens in maintaining and improving their areas.

Mrs. Shirley Turnage, TCWA board member and project coordinator, reports that five truck loads of trash were collected—and that almost everyone had a good time.

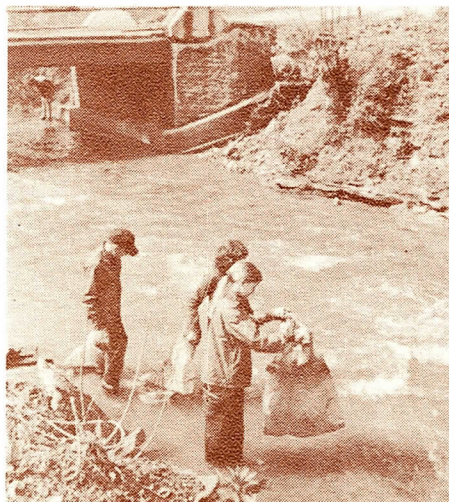
"I think an element of responsibility was instilled in the minds of many of the young people who worked with us," she said, "some of the garbage and junk we found in otherwise picturesque streams was a sobering experience."



Five truck loads of garbage, refuse and stream-clogging debris were collected. Local Jaycees shown above separate the resalable scrap for recycling. Everything from washing machines to pop bottles were found.

Primarily organized by Mrs. Turnage, the project was a prototype for others to be used throughout the watershed and consists of the following:

- **Notification** to all local environmental agencies in memorandum form to identify the project, request their aid and set a date for a coordination meeting.
- **Coordination Meeting(s)** are then held to assign sections of streams to various groups and answer all questions involving refuse pick-up, crossing private property, etc.
- **Township Aid** is requested to utilize municipal trucks and provide drivers to carry collected rubbish to proper landfills, or other means of conveyance is located.



Eighteen groups participated including boy scouts and girl scouts, jaycees, civic associations and school and church groups. All appeared to have a good time. Believe it or not these children working on Haymaker Run are known as the Pollution Solution Group; Wisdom indeed for people so young.



It was a good learning experience; an opportunity to be outdoors and provide a community service, too. Girl Scout Troop 79 working on a bank side near Tarr Hollow Road.

- **Public Awareness** is obtained through press releases to notify property owners that volunteers will be in the area on clean-up day(s).
- **Evaluation** is made by use of a card showing participants, hours worked, section of stream cleaned and a note on rubbish collected. A card is completed by each group leader.
- **Monitoring**, on a continuing basis, is requested of each group for the section of stream they have cleaned. They are asked to notify TCWA if violators of the Clean Streams Law (of Pennsylvania) are seen polluting and, if possible, to remove debris on a continuing basis as they see the need.

If other environmental groups are interested in coordinating stream clean-up programs in their watershed, TCWA has the necessary form letters and other information to begin. Call or write TCWA executive director, John M. Mores, for further information.



A total of 183 volunteers, contributing over 580 hours of work, participated in the May 12 stream cleaning of Haymaker Run and Sections of Turtle Creek. Above, Boy Scout Troop 204 working Turtle Creek near Murrysville.

TCWA Undertakes \$40,000 Stream Rehab Program

Using Model Cities money, the TCWA has accepted a contract to devise plans and supervise construction on Dirty Camp Run in Pitcairn Borough.

The stream has been troubled by problems of bank slides, erosion, undercutting of a municipal road, and deterioration of retaining walls that channel the stream through downtown areas of Pitcairn.

Because of the situation, Model Cities had been requested by Pitcairn's Council and citizens to provide monies to do repair work and bank stabilization. A total of \$40,000 was budgeted for this purpose and TCWA was asked to accomplish the work.

However, this amount is only a portion of the total Model Cities estimates is necessary to do all of the rehabilitation needed; it was expected that monies would be procured to complete the work in later years.

With the continuation of the Model Cities program in doubt past mid 1974, TCWA may have to "make do" with monies available.

Because of this and because most of the work required is labor intensive, TCWA has arranged a project utilizing, to the greatest degree, manpower from the County's Public Employee Program (PEP).

These workers, many of them from this area of Allegheny County, should provide a maximum amount of accomplishment for the dollars available due to the fact that a portion of their pay is federally subsidized.

Consultant on the project, George Wright Engineers of Valencia, Pa. is developing the construction plans.

With boro secretary George Meyers and other members of council, TCWA is setting priorities so that the most serious problems are corrected first. Citizen groups and Model Cities are also involved in this decision-making.

Engineering work began April 15 and construction is expected to commence around the end of June. Although the contract runs through April, 1974 all work is expected to be complete by the end of the 1973 Fall season.

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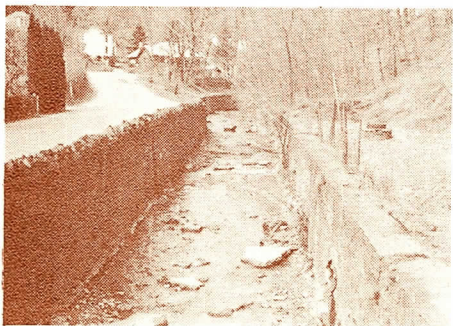
Rod McNeal, Coordinator for PEP, has assured TCWA that his work crews will be both quick and effective. He said, "because of our subsidy program, we will be able to accomplish far more than you could normally expect for the monies being spent."

TCWA is also attacking local sewage and refuse problems in conjunction with the project.

Monroeville Borough was notified in March of municipal sewerage leaks between manholes 3 and 5 on Sugar Camp Run and is working to correct the problem.

Also, a number of illegal stream-side garbage dumps have already been located. The Allegheny County Health Department will shortly be notified of their location.

Citizens of Pitcairn are being asked to participate by cleaning the banks of their properties and providing access rights to PEP work crews.



Much of Pitcairn is protected by retaining walls, now in need of repair.



Undercutting of wall requires concrete footer.



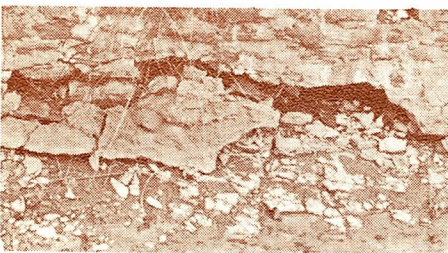
Young Pitcairn volunteer helps locate problem areas.



Bank stabilization is needed in a number of areas.



Municipal road is threatened by undercutting.



Undercutting of wall requires concrete footer.



Sediments at the mouth of Dirty Camp Run.



WHAT'S HAPPENING
OUT THERE IN THE
TURTLE CREEK
WATERSHED?

TREES

The TCWA has begun a tree planting program designed to add some green to denuded areas in the region.

In a step by step progression, TCWA anticipates moving throughout the watershed to plant areas that need beautification or soil stabilization.

Most of the trees will be evergreens. TCWA board director and project coordinator, Mr. Alfred B. Carl, says that a combination of Norway Spruce and White Pine will likely be the bulk of the trees planted.

Carl states, "The Norway and Colorado Spruces are fine looking trees and very hardy. They are not likely to be affected by car or industrial air pollution," he said, "and they grow 2 to 3 feet a year in reasonably suitable soil."

The pines such as White Pine and Austrian Pine will also be used.

White Pine is probably the fastest growing of all the local evergreens. Although sometimes sparse of limb and gangly looking in its first few years, the trees grow to a stately looking adult, and this pine is one of the most important lumber trees in the United States today.



Carl identifies White and Austrian Pines as being used more for protective beauty along streams and around recreational areas, while the spruces will be used on road banks and other areas for decorative purposes and bank stabilization.

In some places shrubs will also be used.

The watershed has been divided into units so that a concentrated effort can be obtained for each. The Citizens Conservation Corps (CCC) of the Allegheny County Conservation District (ACCD) is being used along with boy scouts, girl scouts and other interested groups living in each unit's locale.

The mechanism that leads to "planting day" is that local groups are organized, the CCC notified and permits and land access rights obtained by TCWA.

Trees which are about three years old are then purchased by TCWA, usually from Musser Nursery of Indiana, Pa. Trees of this age have shown themselves to be able to survive at percentage rates.

The day for planting is then set and each group is notified of the equipment it will need.

At this time, areas along the Tri-Boro Expressway and along Turtle Creek between East Pittsburgh and Pitcairn are being planted.

Special thanks from TCWA go out to Mr. Alfred Kittle of PennDOT for his aid in obtaining permits; Mr. Robert Frees, Soil Conservation Service, for helping in tree and site selection; and Mr. Frank Bunda, landscape architect, for helping in the design for tree planting. PennDOT is recognized for the purchase of the trees that were planted on their right-of-way.

Should any groups be interested in helping in similar endeavors, please call the TCWA at 256-2433 and your name will be added to the list of volunteers.

You will be notified when areas in which you are interested are to be planted.

Tree planting coordinator Al Carl, his two daughters and Mr. Wilfred Kittle, of PennDOT plant 1 of the 1400 trees that have been planted in the watershed.

STREAM TESTING PROGRAM

Beginning in January, 1973, TCWA, through the efforts of Mike R. Watts and the Allegheny County Bureau of Tests, began a monitoring of water quality throughout the watershed.

The testing is in-depth and includes 29 separate tests on each sample for various chemicals, bacterial agents and other water quality elements.

Designed to keep a running account of stream conditions, all of the major tributaries in the watershed are tested. Twenty sampling stations have been located.

Summary reports are prepared by Mr. Watts and submitted to TCWA on stream conditions periodically.

An excerpt from the latest report (on Station 13) indicates the type of information obtained.

"Under somewhat satisfactory stream conditions, with a higher Ph, alkalinity, high dissolved oxygen and very low iron-aluminum salts content, (all contributing to ideal bacterial activity to stabilize the organic pollutions) Station 13 just below Jeannette, with high 5-day Biochemical Oxygen Demands and coli-form counts, indicates a need for upgrading (Jeannette's) treatment facility."

TCWA Report

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East Pittsburgh, Pa. 15221

