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Environmental impact of Orgo farms development.

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ENVIRONMENTAL IMPACT

OF

ORGO FARMS DEVELOPMENT

TOWNSHIP OF COLTS NECK, NEW JERSEY

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COLTS NECK AND THE STATE DEVELOPMENT GUIDE PLAN

The State Development Guide Plan (SDGP), revised 1980, is "a broadbased policy guide which recommends where future development and conservation efforts in New Jersey should be concentrated" and is graphically shown on a Concept Map. As noted in the SDGP:

> "The Concept Map consists of broad, generalized areas without site-specific detail or precise boundaries, and areas designated for growth should not be thought of as solid urbanization without any open space, farmland or recreation areas."
>
> . . .
>
> "Since it is not the purpose of the Guide Plan (SDGP) to supplant more detailed plans prepared by municipalities and counties, or other State departments, the categories depicted on the Concept Map are general."

The Concept Map indicated four generalized land use types: Growth, Limited Growth, Agriculture and Conservation areas. It is clear that the SDGP delineation of land use types is intended

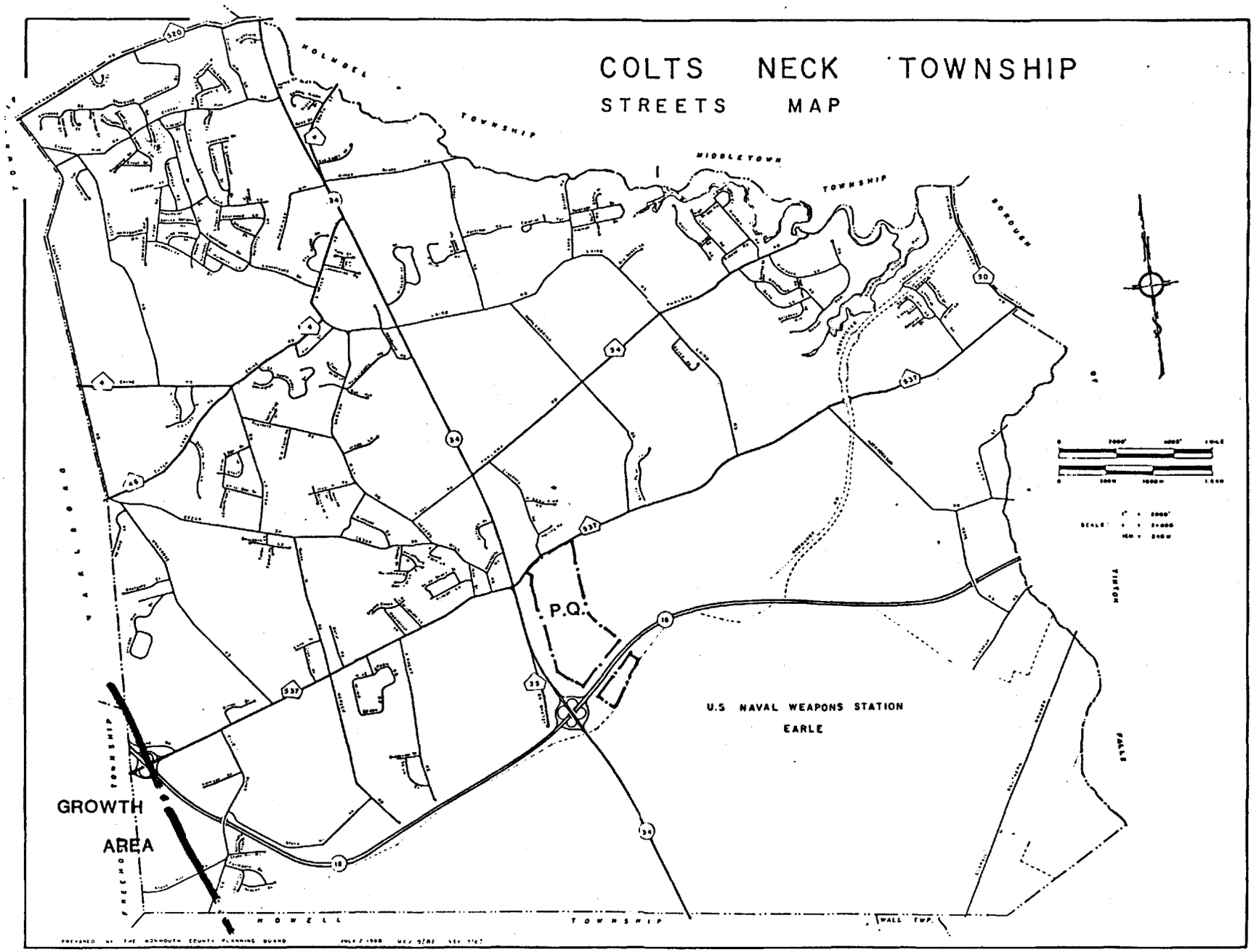
to be broad-brushed and conceptual, rather than detailed and specific. The specific delineation of land use types is to be accomplished at the county and local level where natural and cultural features would provide reasonable and proper limits, or boundaries, to the extent of land use types.

According to the Monmouth County portion of the SDGP, a very small section of the southwestern section of Colts Neck is shown as located in a Growth Area. It includes approximately 260 acres less than 1.5% of the Township.

The SDGP boundary line in Colts Neck between the Growth and Limited Growth Areas, if literally drawn, extends in a north-south direction following no logical natural or cultural features. It follows no property lines and, indeed, randomly divides properties for no purpose (see accompanying map).

Monmouth County and the State Development Guide Plan

The Monmouth County Growth Management Guide (GMG) and the SDGP are substantially consistent with each other. A minor difference, insofar as Colts Neck is concerned, between the two plans occurs in the southwest corner of the Township where the SDGP identifies 260 acres as Growth Area; the GMG, in contrast, identified no part of Colts Neck as a growth area. Thus,


COLTS NECK TOWNSHIP
STREETS MAP
HOLMDEL TOWNSHIP
MIDDLETOWN TOWNSHIP
BOROUGH
P.O.
U.S NAVAL WEAPONS STATION
EARLE
GROWTH
AREA
FREEHOLD TOWNSHIP
HOWELL TOWNSHIP
WALL TWP.
PARKER

except for 280 acres or 1.5% located in the extreme southwestern corner of the Township both the SDGP and GMG agree that Colts Neck is in a Limited Area.

There are several basic reasons for this delineation:

(i) Colts Neck is a largely low density/rural community with a state-wide reputation for its horses, farms and stables;

(ii) The Township lacks an infrastructure to support urban densities, and

(iii) Colts Neck contributes the major drainage area to the Swimming River Reservoir, a major water supply that delivers potable water to approximately 250,000 persons. Indeed, some two-thirds of the Township drains into the Swimming River Reservoir.

The Township of Colts Neck, therefore, is viewed in the Monmouth Master Plan as an essentially low density, rural area intended to provide to the region, the open space amenities and resources necessary to the health and vitality of the region.

The Swimming River Reservoir

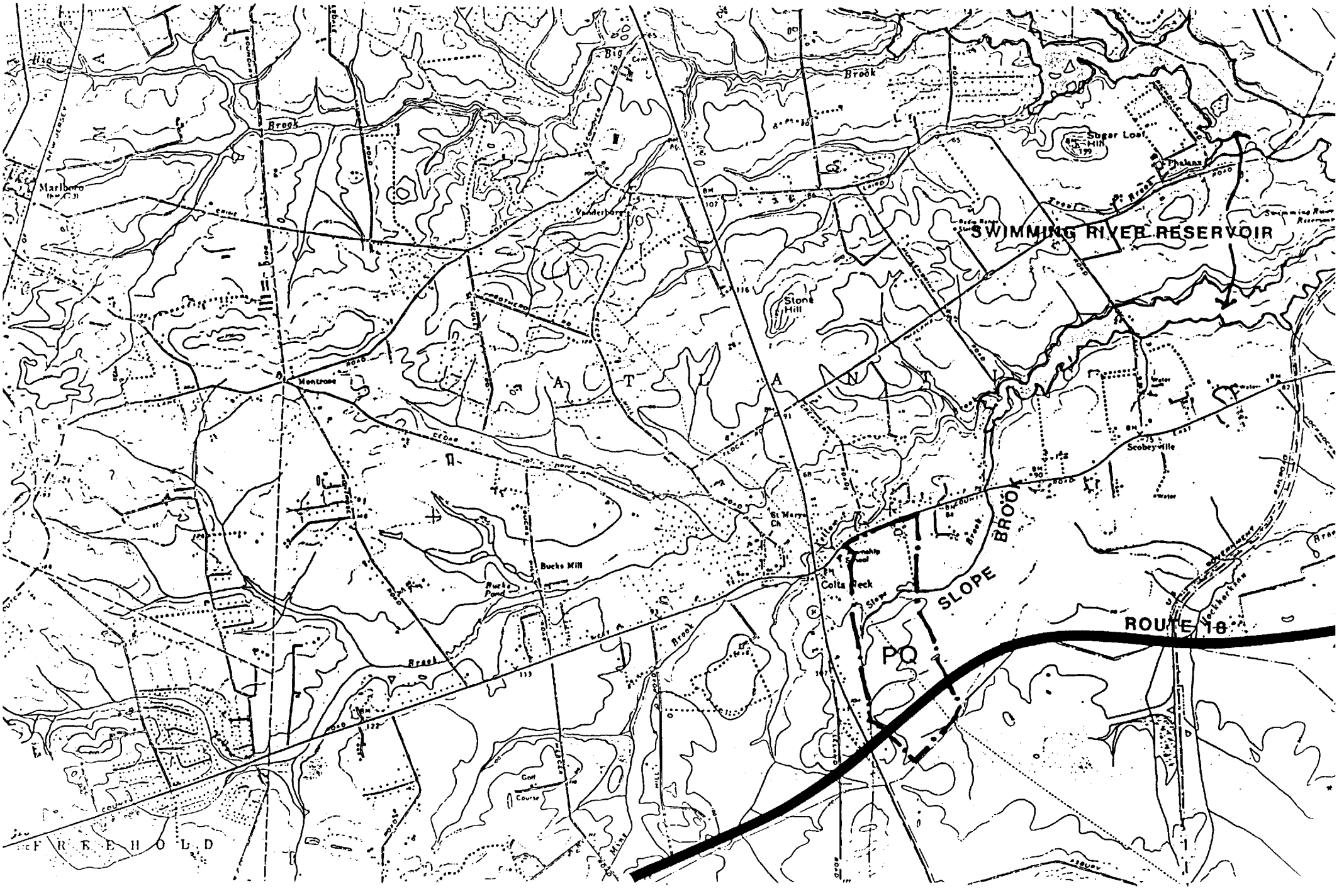
The Swimming River Reservoir is located in Colts Neck, Middletown and Holmdel. Most of the water surface as well as drainage area is located in Colts Neck. More than 70% of the reservoir's water surface is in Colts Neck. Additionally, of the six townships that make up the reservoir's drainage area, none

accounts for more land in the drainage area than Colts Neck. Development in the Township of Colts Neck has an early and substantial potential impact on the quality of water in the Swimming River Reservoir.

The largest percentage of land in Colts Neck lies within the Swimming Reiver Reservoir--approximately two-thirds of the Township's 31.7 square mile area, or 21 square miles drains into the streams and creeks which flow into the reservoir. The "divide" that separates the Swimming River Reservoir drainage basin from the lower Swimming River is a low ridge between Routes 537 and 18. This ridge has an elevation of about 90 to 110 feet above mean sea level. It divides the Orgo Farms site into two unequal parts, with the larger part draining into Slope Broad which is a tributary to the Swimming River Reservoir.

Development of Orgo Farms on Swimming River Reservoir

The Orgo Farms property is located along Route 537 in south central Colts Neck. It consists of 190 acres between Routes 18 and 537. A ridge passing through the site divides the property into two watershed sub-basins: approximately 85% is drained by Slope Brook which flows directly into Swimming River Reservoir; and the remaining 15% drain into Hokhockson Brook which is a tributary of the Nevesink River, downstream of the reservoir.


SWIMMING RIVER RESERVOIR
SLOPE BROOK
ROUTE 18
PQ
Marlboro
Montrose
Bucks Mill
Colts Neck
Stone Hill
Scobeyville
Sugar Loaf Hill
Golf Course
FREEHOLD

Slope Brook rises on the Orgo Farms property. From the Orgo Farms property line to the reservoir, Slope Brook travels approximately one mile.

Development of Orgo Farms at a density of 6 units per acre will have a negative impact on the Swimming River Reservoir, a major surface water supply source for Monmouth County. Heretofore development in Colts Neck has been at relatively low densities. In the Monmouth County Planning Boards's publication, Planning Area 5 Land Use Report (1978) Colts Neck was the only community in the planning area which had no residentially developed lots less than 10,000 square feet in area. This low density was a reflection of (i) the lack of an urban infrastructure to support higher densities and (ii) the rural character of the Township.

This low density character is a positive influence on the water quality of the Swimming River Resevoir. Study after study has demonstrated the containminating impact of urban stormwater runoff on water quality. When the receiving body of water is a potable water reservoir, the standards for feeder streams must be of high quality in order to protect the public health and safety.

Some of the common and unavoidable water quality consequences on the Swimming River Reservoir from the urban development of Orgo Farms are:

- Increased water supply demand accompanied by decreased

groundwater recharge from reduction in pervious or open soil areas. Although the shallow groundwater is not a potable water source, it does serve the purpose of maintaining base stream flow during summer months. Indeed, during dry periods, stream flow is essentially seepage from groundwater.

- Removal of trees and vegetation, bulldozing and other construction efforts resulting in accelerated land erosion, increased stormwater flows and increased sedimentation of streams and the reservoir, leading to accelerated thermal destabilization of the surface waters;

- Installation of hydraulically efficient stormwater drainage systems and sanitary sewers and treatment facilities, resulting in
    - increased flood peaks,
    - decreased runoff infiltration and decreased groundwater recharge; and
    - decreased base flow in streams, resulting in reduced assimilative capacity of streams and reduced water quality in the Reservoir.

All of the above impacts of development are directly related to the intensity of the development; that is, the higher the development densities, the greater the environmental consequence. There is a strong relationship between land use and stormwater characteristics.

Stormwater Pollutants

An understanding of the potential sources of stormwater pollutants is of primary importance when analyzing the impact of urban runoff. The accumulation of the various pollutants within a basin can be attributed to several sources and the individual effects are difficult to separate. However, a qualitative knowledge of the probable sources makes possible an estimate of potential impacts.

(a) Street Pavement. The components of road surface degradation become part of the urban runoff loading. The aggregate material is the largest contributor and additional quantities will come from the binder, fillers, and any substance applied to the surface. The amount of pollutants will depend on the age and type of surface, the climate, and the quantity and type of traffic.

(b) Motor Vehicles. Vehicles can contribute a wide variety of materials to the street surface runoff. Fuels and lubricants spill or leak, particles are worn from tires or brake linings, exhaust emissions collect on the road surface, and corrosion products or broken parts fall from vehicles. While the quantity of material deposited by motor vehicles is expected to be relatively small, the pollution potential is important. Vehicles are the principal nonpoint source of asbestos and some heavy metals including lead.

(c) Land Surface. The type of ground cover found in a drainage basin and the amount of vehicular and pedestrian traffic

is a function of land use and will affect the quality of storm runoff.

(d) Litter. Litter consists of various kinds of discarded refuse items, packaging material, and animal droppings. Although the quantities are small and not significant sources of pollution, the debris is highly visible in a receiving stream.

(e) Spills. These obvious surface contaminants can include almost any substance hauled over public roads. Dirt, sand, and gravel are the most common examples. Industrial and chemical spills are potentially the most serious.

(f) Anti-Skid Compounds and Chemicals. Municipalities employ large amounts of substances designed to melt ice during the winter. Salts, sand, and ash are the commonly used agents. A variety of other chemicals may be used as fertilizers, pesticides, and herbicides. Most of these materials will become part of the urban runoff.

(g) Construction Sites. Soil erosion from land disturbed by construction is a highly visible source of solids in storm runoff.

(h) Collection Network. Storm sewer networks using natural or improved earthen channels will be subject to erosion of the banks. Collection networks also tend to accumulate deposits of material that will be dislodged and transported by storm flows.

It is obvious from this list that there are many potential sources of pollutants within an urbanizing basin and the sources vary in importance. The quantities that accumulate are a func-

tion of natural conditions and urban development. Most of the sources exist concurrently in the urban environment and, although their effects cannot be isolated, it is clear that there is a relationship between density and pollutant loadings.

Impact on Receiving Waters

The impact of residential development on receiving waters cn be classified into five groupings:

(a) Dissolved Oxygen (DO) Depletion. The classical problem related to organic pollution of receiving waters is the consumption of instream oxygen by the bacterial breakdown of organic material. The resulting low levels of oxygen will destroy sensitive species of fish and aquatic organisms. The organic material (and unoxidized nitrogen compounds) in runoff can be important to the oxygen balance of streams. In the extreme, depletion of dissolved oxygen (DO) can lead to discoloration, gas formation and odors in the receiving waters.

(b) Pathogen Concentrations. The presence of excessive concentrations of objectionable microorganisms can impair the ability to utilize the receiving water for certain water supply purposes.

(c) Nutrients. The discharge of materials which fertilize or stimulate excessive or undesirable forms of aquatic growth can create significant problems in some receiving water systems. Overstimulation of aquatic weeds or algae (eutrophication) can be

aesthetically objectionable, cause dissolved oxygen problems, and in extreme cases, can create odors and heavy mats of floating material at shorelines.

(d) Toxicity. Toxicity problems can fall into either of two categories: (I) metals/pesticides/persistent organics, which may exhibit a subtle, long-term effect on the environment in areas well removed from the area under consideration by the discharge of small quantities which gradually accumulate in sensitive areas.

(e) Aesthetic Deterioration and Solids. Either general appearance (dirty, turbid, cloudy) or the actual presence of specific, objectionable conditions (odors, floating debris, oil films, scum or slimes, etc.) may make the receiving water unattractive or repugnant to those in its proximity. In addition, particulate matter may cause the formation of sediment deposits that smother bottom dwelling aquatic organisms and lead to eutrophication.

This impact will be received first by Slope Brook and then by the Swimming River Reservoir. Channelization of Slope Brook will reduce its assimilative capacity thereby reducing its role as a protective buffer to the reservoir. Slope Brook is a first-order headwater stream, and as such has an important function in preserving and protecting water quality in downstream receiving waters. Clearly, it is not possible to protect all waters from urban development; priority system is necessary which identifies those waters which are most sensitive to contamination and,

which, if contaminated, will pose a hazard to public health. The Swimming River Reservoir is such a water body and its protection is essential to all residents of its service area.

Alternate Location Per Higher Density Residential Development

More appropriate areas for higher density residential development in Colts Neck would be outside the Swimming River Reservoir watershed in the Hokhockson Creek watershed. The portions of the Hokhockson Creek watershed located in the eastern section of the Township have good highway access as well as proximity to the Red Bank Urban Center and Suburban Settlement, as delineated in the Monmouth County GMG. In planning and environmental terms, there is merit in locating higher density development as extensions of existing areas rather than "leap-frogging" into rural areas which lack an urban infrastructure.

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