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DEPARTMENT OF WATER AND AIR RESOURCES

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August 21, 1968

Honorable J. Vivian Whitfield, Chairman
North Carolina Board of Water & Air Resources
Old Health Building
Raleigh, North Carolina

Dear Senator Whitfield:

Submitted herewith is a report on an investigation of water use in the Beaufort County area of Eastern North Carolina. The investigation and report were directed by the Board of Water and Air Resources and accomplished by the Department under the provisions of the North Carolina Water Use Act of 1967.

Sincerely,

George E. Pickett

Enclosure

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INTRODUCTION

The North Carolina Board of Water and Air Resources, by resolution the 8th day of September 1967, directed the Department of Water and Air Resources to conduct an investigation of water use in a specified area of Eastern North Carolina and to report to the Board thereon in accordance with the provisions of the North Carolina Water Use Act of 1967. A copy of the Board's resolution is attached as Appendix "A".

The area specified in the Board's directive includes all of Beaufort, Pamlico and Washington Counties, and portions of Carteret, Craven, Hyde, Martin and Tyrrell Counties. The location of the area is shown on the outline map attached as Appendix "B". The area is more specifically delineated on the map attached as Appendix "C".

The purpose of the investigation was to ascertain and consider the facts relevant to conservation and use of water in the specified area, with the objective of determining whether or not the aggregate uses of water are such that the area should be declared a "capacity use area" within the meaning and under the provisions of the Water Use Act of 1967.

The investigation was conducted and the report prepared in accordance with instructions contained in Section 3 (c) (2) of the 1967 Water Use Act. A copy of the Act is attached as Appendix "D".

WATER RESOURCES IN THE AREA

General

There is a bountiful supply of fresh water in the area. Mean annual precipitation is about 53 inches. Of this amount, about 18 inches, or roughly 34 percent of the total, runs off into streams and rivers. An estimated 15 to 25 percent percolates downward to the zone of saturation and becomes ground water. Ground-water reservoirs supply most of the fresh water used throughout the area.

Surface Water Resources

In general, surface water resources are bountiful in quantity but are not suitable for general purpose use. Streamflows are substantial; however, most streams are classified as tidal salt waters or designated as swamp waters. They are generally unsuitable as sources of supply for domestic, commercial and agricultural uses, or for industrial uses that require fresh water.

Natural lakes in the area contain sizeable quantities of water, but, like stream waters, most lake waters are unsuitable for general use.

There are no artificial impoundments in the area that provide a significant quantity of fresh water for general purpose use. The low, flat terrain makes the construction of fresh-water impoundments infeasible.

Ground Water Resources

Ground water resources are plentiful throughout the area, and the quality is generally good. Principal aquifers have not

been extensively developed and their capacities have not been definitely established; however, it is clear from the data available that ground water resources in the area are sufficient to meet present and projected needs, provided the resources are properly developed and wisely used.

There are numerous aquifers underlying the area. Three principal fresh water aquifers lie between the land surface and about 300 feet below land surface. Deeper aquifers contain saline water unfit for general use. The three principal fresh water aquifers can be identified and briefly described as follows:

Aquifer A. This aquifer is composed of permeable sands found between the land surface and the first layer of impermeable material below the land surface. Its average thickness is about 35 feet. Water in this aquifer is unconfined and occurs under non-artesian conditions. The yields of wells tapping the aquifer are low - usually less than 10 gallons per minute (gpm). The water is generally corrosive and, in some localities, very hard.

Aquifer B. This aquifer lies in the Yorktown Formation and includes the shell and sand beds in the middle two-thirds of that formation. It underlies Aquifer A and is separated from it by generally impermeable layers of silt and clay. These layers confine the water in Aquifer B under artesian, semi-artesian or leaky-artesian conditions, depending on the thickness of the overlying silt and clay. The top level of Aquifer B ranges from about 40 to 120 feet below mean sea level. Its average thickness is about 70 feet. Wells tapping this aquifer may yield up to 250 gpm in some locations. The water is generally hard and, in some localities, contains heavy amounts of dissolved iron.

Aquifer C. This aquifer lies in the Castle Hayne Formation and is composed of the Castle Hayne limestone. The top level of the aquifer ranges from about 160 feet to more than 450 feet below mean sea level. Its thickness ranges from about 60 to 250 feet, with an average thickness of about 190 feet. Aquifer C is separated from overlying Aquifer B by continuous layers of gray silt and clay (in the Yorktown Formation) and by layers of dolomitic limestone, clays and phosphatic sands (in the Pungo River Formation). These layers, ranging in thickness from 10 to 90 Feet, act as confining beds for the water in Aquifer C which occurs under artesian conditions. Aquifer C (the "Castle Hayne" aquifer) is the most permeable water bearing formation in the area and is the largest and most valuable source of ground water supply for the area. Yields from 8-inch diameter wells tapping this aquifer range up to 300 gpm. Yields of 1,000 gpm or more can be developed in some locations. Water in the upper levels is generally hard and may contain excessive amounts of dissolved iron. The water at levels lower than about 300 feet below sea level is generally brackish or saline.

WATER USE IN THE AREA

Detailed records of water use in the area are incomplete; however, the information available does permit the development of quantity estimates that are suitable for measuring total water demands, present and projected, against total water resources.

Virtually all of the fresh water used in the area is supplied from ground water sources. Total usage includes water

for domestic (chiefly household operations), agricultural (irrigation and stock watering), commercial (e. g., restaurants and laundries) and industrial (processing, cooling, etc.) purposes.

The total quantity of fresh water now being used in the area is well below total ground water resources in the area. If the quality of ground waters in the area is maintained at or above present levels, then the available ground water resources should provide fresh water sufficient to meet the needs of future generations.

Present uses of ground water for industrial purposes are significant. Relatively large quantities are being used in connection with quarrying, wood products manufacturing, textile manufacturing and mining. The present and potential effects of concentrated large-scale withdrawals constitute a problem that will be treated in a later section of this report.

WATER PROBLEMS IN THE AREA

Surface Water Problems

Major surface water problems in the area are related principally to the need for improved drainage and flood prevention. A number of watershed and channel improvement projects have been approved for construction and others are in the planning stage. The eventual effects of these projects on ground water resources are presently indeterminate. Swamp drainage, which is a feature of some projects, may reduce the amount of water available for aquifer recharge; however, any resultant effects of this nature are not expected to be of major proportion.

Ground Water Problems

As previously stated, the total quantity of fresh water available from principal aquifers in the area exceeds present and projected demands for the area as a whole. These aquifers are capable of supplying large quantities of good quality water for many generations; however, their capabilities must be properly developed and wisely exploited if their full potential is to be realized.

The deeper artesian aquifers throughout the area contain salt waters that are a potential source of contamination for the overlying fresh water aquifers. There have been cases of contamination by vertical leakage through wells that penetrated salt water areas, but this is not a common occurrence and the instances of such contamination have been of a relatively minor nature. There was one comparatively recent significant case of contamination in a shallow aquifer by salt water encroachment resulting from dewatering for quarry operations. This occurrence, in 1957 near New Bern, was just outside the area of this investigation. These cases of salt water contamination illustrate the delicate balance between fresh water and salt water in the area, and emphasize the absolute necessity for exercising caution and good judgment in utilizing fresh water resources.

Investigation has revealed no current major ground water problems in the area that have resulted from withdrawals of water for municipal supplies or for rural domestic and agricultural uses. There is no evidence of any significant present effects on ground water resources as a result of withdrawals for industrial use in connection with quarry operations, wood products manu-

facturing, food processing, and textile manufacturing. There are significant present effects from concentrated large-scale withdrawals in connection with mining operations.

Since July 1965 there have been continuous large-scale withdrawals from the Castle Hayne aquifer (identified as Aquifer C in a previous section of this report), at a site on Lee Creek along the Pamlico River, for the purpose of dewatering an area for open-pit mining of phosphate deposits in the sands of the Pungo River Formation which overlies the Castle Hayne Formation. The effects of these withdrawals are significant.

In July 1964, about one year before continuous large-scale pumpings were started at Lee Creek, the Department of Water Resources reported (in Ground Water Circular No. 2) that "large-scale pumping from the principal aquifers on a continuous long-term basis will lower the water table and artesian pressures sufficiently to permit encroachment of salt water into these aquifers, unless preventive measures are taken". That report recommended the establishment of minimum protective measures before the start of any continuous large-scale withdrawals of ground water. It recommended that such measures include steps to restrict the effects of pumping to the immediate vicinity of the pumping site. It pointed out that the effects of pumping could be so restricted by recharging the aquifers through a system of properly located wells or pits, thereby preventing major changes in the hydrology of the area and thus avoiding extensive contamination of the aquifers.

Since large-scale pumpings were started at Lee Creek, significant hydrologic changes have occurred. The influence of this

concentrated pumpage has spread over an area of more than 2,000 square miles and extending 25 to 30 miles from the pumping site. Water levels in the Castle Hayne aquifer have declined as predicted. (For example, the decline at Belhaven, 15 miles northeast of the pumping site, is about 12 feet). Formerly free-flowing artesian wells have ceased to flow, while water levels in a number of wells have declined below the depths to which these wells were originally constructed. There has been a reduction of artesian pressures in the Castle Hayne aquifer as predicted. This has caused a reversal of natural seepage, thereby permitting the movement of salty or brackish water into the Castle Hayne aquifer at some places. Also, it is probable that the salt water naturally found in the lower levels of the Castle Hayne aquifer is moving slowly upward in response to the lowering of water levels in this aquifer. Under present hydrologic conditions the entire aquifer could eventually become contaminated by salt water. However, under present conditions, the rate of salt water movement will be very slow and there is no immediate danger of wholesale contamination in the Castle Hayne aquifer.

The present adverse effects of continuous large-scale pumpings at Lee Creek could be overcome by either materially reducing the quantity of water now being pumped or by providing an adequate system of aquifer recharge as suggested by the Department of Water Resources in 1964. Any material increase in the present rate of withdrawal would intensify the adverse effects of present pumpage.

WATER CONTROLS IN THE AREA

Present controls on the use of water resources in the area consist almost entirely of voluntary restraint by users and the exercise of riparian rights.

Developments in recent years, notably the start of phosphate mining in Beaufort County, have radically altered the water use pattern of the area and greatly increased the actual and potential demands for ground water. For example, the present concentrated pumpage to facilitate mining operations at Lee Creek exceeds the total amount of water used for all other purposes throughout the entire area of investigation. If open-pit mining operations were substantially expanded at the Lee Creek site (an intent to do so has been indicated), the resultant increase in concentrated pumpings, without preventive measures or proper controls, would seriously aggravate an already undesirable water use situation.

Existing controls do not assure reasonable conservation and protection of water resources in the area under present and emerging water use conditions. There is a clear need for such additional controls as are necessary to regulate ground water uses and thus prevent a deterioration of ground water resources, particularly in the Castle Hayne aquifer.

Regulatory controls are authorized by the North Carolina Water Use Act of 1967.

PRINCIPAL FINDINGS AND CONCLUSIONS

It is found and concluded that -

1. Within the area of investigation, virtually all fresh water is and must continue to be supplied from ground water sources.
2. Ground water resources in the area are plentiful and, if properly developed and managed, they can provide fresh water sufficient for all present and projected needs of the area.
3. The Castle Hayne aquifer is the principal source of water supply for the area. The capability of this aquifer is being adversely affected by continuous large-scale concentrated pumpings (since 1965) at a phosphate mining site on Lee Creek along the Pamlico River. Specifically, these continuous pumpings have caused a lowering of water levels and a reduction of artesian pressures in the Castle Hayne aquifer, thus permitting salt water movement which, if the present pumpage rate is continued over a period of years, without preventive measures, could result in salt water contamination throughout the aquifer.
4. Remedial action is required to overcome the present effects of pumpage at the Lee Creek mining site and to avoid similar future effects.
5. Satisfactory results could be achieved by an appropriate reduction in the present rate of pumpage, or by a recharge system that would return to the Castle Hayne aquifer a satisfactory portion of the water withdrawn at the Lee Creek site, or by a combination of these actions. These remedial steps, if taken promptly by the mining operator at Lee Creek, should overcome the present effects of large-scale pumpage since 1965 and

preclude the need for statutory regulation for this purpose at this time. However, these steps would not safeguard against future unacceptable water use practices that might produce similar or equally intolerable effects.

6. The aggregate uses of ground water in the area, particularly with respect to concentrated large-scale withdrawals from the Castle Hayne aquifer, are threatening to impair the supply of fresh water in the Castle Hayne aquifer; therefore, a capacity use situation is emerging in the area.

RECOMMENDATIONS

It is recommended that the Board of Water and Air Resources declare the area of investigation a "capacity use area" within the meaning and under the provisions of the North Carolina Water Use Act of 1967, such area being more particularly delineated by the following described boundary:

"That area bounded by a line beginning at the intersection of highway US 17 and the Roanoke River, at Williamston, and running south along highway US 17 to the Martin-Beaufort Counties line; thence northwest along the Martin-Beaufort Counties line to the Pitt County line; thence generally south along the Pitt-Beaufort Counties line to the Craven County line; thence southwest along the Pitt-Craven Counties line to the Neuse River; thence southeast along the Neuse River to New Bern; thence south along highway US 70 to Morehead City and on to Atlantic; thence north along the eastern edge of Cedar Island, across Pamlico Sound, along the eastern edge of Great Island, to the intersection of highways US 264 and NC 94 near the south shore of Lake Mattamuskeet;

thence north along highway NC 94 to Columbia; thence west along the south shore of Albemarle Sound to the mouth of Roanoke River; thence generally southwest along Roanoke River to highway US 17 at Williamston, the beginning."

(NOTE: The above described area is shown on the map attached as Appendix "C")

SELECTED REFERENCES

Nelson, P. F. and Peek, H. M., Preliminary Report on Ground Water in Beaufort County, North Carolina Department of Water Resources Ground Water Circular No. 2 (1964).

De Wiest, R. J. W., Sayre, A. N. and Jacob, C. E., Evaluation of Potential Impact of Phosphate Mining on Ground Water Resources of Eastern North Carolina (January 1967).

Miller, L. J., Report of Investigations on the Castle Hayne Aquifer as Affected by Phosphate Mining Operations, Texas Gulf Sulphur Company Report (1966).

North Carolina Department of Water Resources, Wise Management of North Carolina Water Resources Through Law (An Orientation Brochure), Vols. I & II (1966).

Lloyd, O. B., Jr. and Floyd, E. O., Ground Water Resources of the Belhaven Area North Carolina, N. C. Department of Water and Air Resources Report of Investigations No. 8 (1968).

APPENDIX "A"

RESOLUTION DIRECTING THE DEPARTMENT OF WATER AND
AIR RESOURCES TO CONDUCT AND REPORT UPON A CAPACITY
WATER USE INVESTIGATION IN EASTERN NORTH CAROLINA

WHEREAS, in 1964, the Division of Ground Water, North Carolina Department of Water Resources, reported (in Ground Water Circular No. 2) the preliminary results of its investigation of ground-water resources in Beaufort County which indicated that large-scale continuous pumping from principal aquifers would lower the water table and artesian pressures sufficiently to permit encroachment of salt water into these aquifers, unless preventive measures were taken; and

WHEREAS, as a result of continuing investigation by the Division of Ground Water, it has been found that ground-water withdrawals since July 1965 along the Pamlico River have reduced artesian pressures and caused a reversal of the natural seepage so that, in some places, salty or brackish water from the river has moved and will continue to move into and contaminate fresh water in the Castle Hayne aquifer; and

WHEREAS, there are indications that additional heavy withdrawals of ground water in Eastern North Carolina are contemplated in connection with planned industrial operations; and

WHEREAS, the Board of Water and Air Resources believes that a capacity water use situation may be emerging in a general area that includes all of Beaufort, Pamlico and Washington Counties, and portions of Carteret, Craven, Hyde, Martin, and Tyrrell Counties;

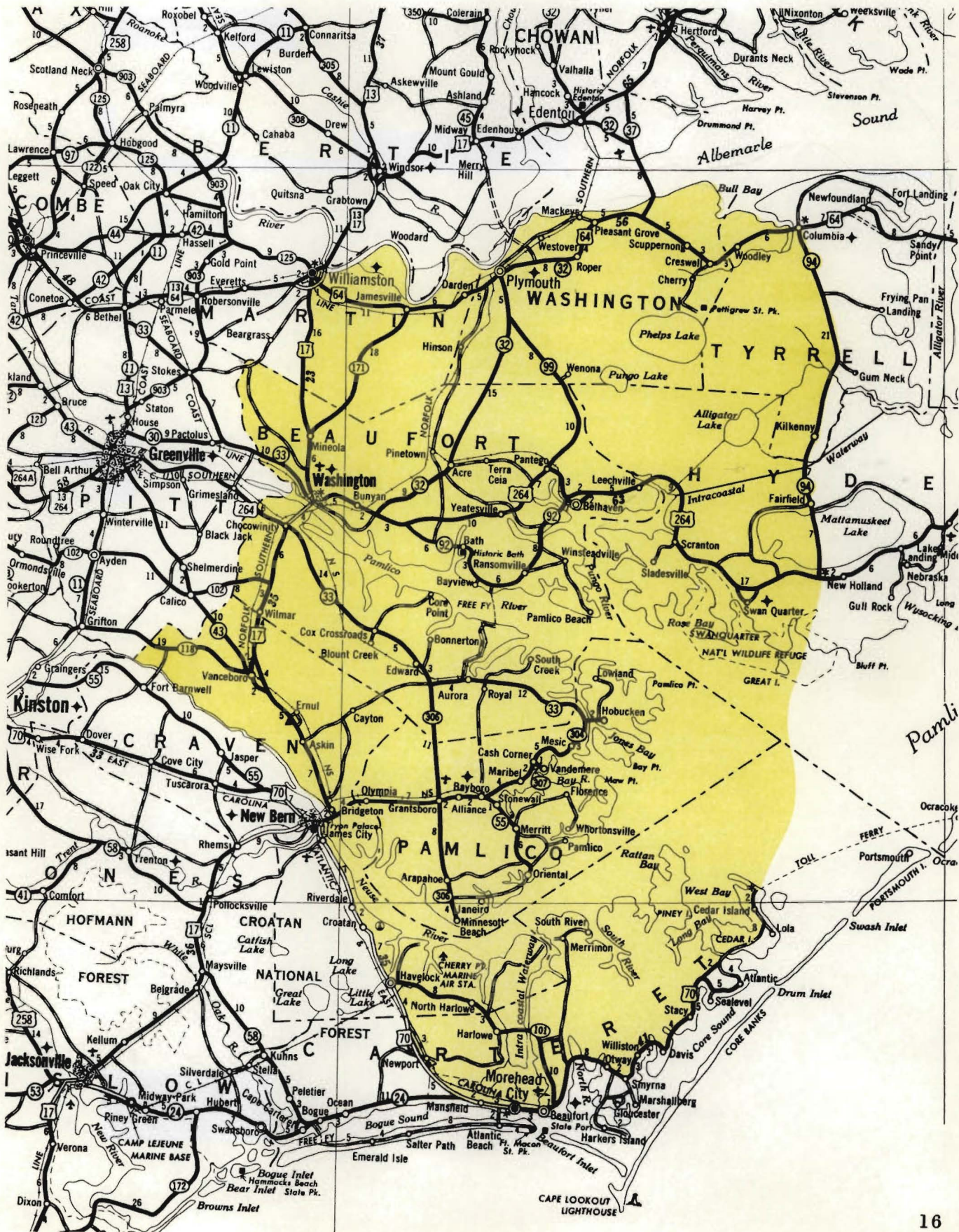
NOW, THEREFORE, BE IT RESOLVED by the North Carolina Board of Water and Air Resources:

That the Department of Water and Air Resources be, and is hereby, directed to conduct a capacity water use investigation in the eight-county area heretofore specified and to report to the Board thereon, all in accordance with the provisions of the North Carolina Water Use Act of 1967.

This the 8th day of September, 1967.

APPENDIX "C"

MAP OF THE AREA OF INVESTIGATION



APPENDIX "D"

A BILL TO BE ENTITLED AN ACT TO GRANT LIMITED REGULATORY AUTHORITY TO THE NORTH CAROLINA BOARD OF WATER RESOURCES REGARDING THE USE OF WATER AND FOR RELATED PURPOSES

Section 1. Short Title.--This Act shall be ~~known~~ and may be cited as the Water Use Act of 1967.

Sec. 2. Declaration of Purpose.--It is hereby declared that the general welfare and public interest require that the water resources of the State be put to beneficial use to the fullest extent to which they are capable, subject to reasonable regulation in order to conserve these resources and to provide and maintain conditions which are conducive to the development and use of water resources.

Sec. 3. Declaration of Capacity Use Areas.--(a) The Board may declare and delineate from time to time, and may modify, capacity use areas of the State where it finds that the use of ground water or surface water or both require coordination and limited regulation for protection of the interests and rights of residents or property owners of such areas or of the public interest.

(b) Within the meaning of this Act "a capacity use area" is one where the Board finds that the aggregate uses of ground water or surface water, or both, in or affecting said area (1) have developed or threatened to develop to a degree which requires coordination and regulation, or (2) exceed or

threaten to exceed, or otherwise threaten or impair, the renewal or replenishment of such waters or any part of them.

(c) The Board may declare and delineate capacity use areas in accordance with the following procedures:

(1) Whenever the Board believes that a capacity use situation exists or may be emerging in any area of the State, it may direct the Department to investigate and report to the Board thereon.

(2) In conducting its investigation the Department shall consult with all interested persons, groups and agencies; may retain consultants; and shall consider all factors relevant to the conservation and use of water in the area, including established or pending water classifications under the Stream Sanitation law and the criteria for such classifications. Following its investigation the Department shall render a written report to the Board. This report shall include the Department's findings and recommendations as to whether the water use problems of the area involve surface waters, ground waters or both; whether effective measures can be employed limited to surface water or to ground water; and whether timely action by any agency or person may preclude the need for additional regulation at that time. The report shall also include such other findings and recommendations as the Department deems appropriate, including recommended boundaries for any capacity use area that may be proposed.

(3) If the Board finds, following its review of the Departmental report (or thereafter following its evaluation of measures taken falling short of regulation) that a capacity

use area should be declared, it may adopt an order declaring said capacity use area. Prior to adopting such an order the Board shall give notice of its proposed action and shall conduct one or more public hearings with respect to such proposed action.

(4) Such notice shall be given not less than 30 days before the date of such hearing and shall state the date, time, and place of hearing, the subject of the hearing, and the action which the Board proposes to take. The notice shall either include details of such proposed action, or where such proposed action is too lengthy for publication the notice shall specify that copies of such detailed proposed action shall be obtained on request from the office of the Board in sufficient quantity to satisfy the requests of all interested persons.

(5) Any such notice shall be published at least once in one newspaper of general circulation circulated in each county of the State in which the water area affected is located, and a copy of such notice shall be mailed to each person on the mailing list required to be kept by the Board pursuant to the provisions of Section 5 of this Act.

(6) Any person who desires to be heard at any such public hearing shall give notice thereof in writing to the Board on or before the first date set for the hearing. The Board is authorized to set reasonable time limits for the oral presentation of views by any one person at any such public hearing. The Board shall permit anyone who so desires to file a written argument or other statement with the Board in

relation to any proposed action of the Board any time within 30 days following the conclusion of any public hearing or within any such additional time as the Board may allow by notice given as prescribed in this section.

(7) Upon completion of hearings and consideration of submitted evidence and arguments with respect to any proposed action by the Board pursuant to this paragraph, the Board shall adopt its final action with respect thereto and shall publish such final action as part of its official regulations. The Board is empowered to modify or revoke from time to time any final action previously taken by it pursuant to the provisions of this section, any such modification or revocation, however, to be subject to the procedural requirements of this Act, including notice and hearing. If the Board finds and orders that a capacity use area shall be declared, its order shall include a delineation of the boundary of said area, and the Board shall instruct the Director of the Department to prepare proposed regulations consistent with the provisions of this Act and commensurate with the degree of control needed from among the classes of permissible regulations set forth in Section 4.

Sec. 4. Regulations within Capacity Use Areas: Scope and Procedures.--(a) Following the declaration of a capacity use area by the Board, it shall prepare proposed regulations to be applied in said area, containing such of the following provisions as the Board finds appropriate concerning the use of surface waters or ground waters or both:

(1) Provisions requiring water users within the

area to submit reports not more frequently than at 30-day intervals concerning quantity of water used or withdrawn, sources of water and the nature of the use thereof.

(2) With respect to surface waters, ground waters, or both: provisions concerning the timing of withdrawals; provisions to protect against or abate salt water encroachment; provisions to protect against or abate unreasonable adverse effects on other water users within the area, including but not limited to adverse effects on public use.

(3) With respect to ground waters: provisions concerning well spacing controls; and provisions establishing a range of prescribed pumping levels (elevations below which water may not be pumped) or maximum pumping rates, or both, in wells or for the aquifer or for any part thereof based on the capacities and characteristics of the aquifer.

(4) Such other provisions not inconsistent with this Act as the Board finds necessary to implement the purposes of this Act.

(b) The Board shall conduct one or more hearings upon the proposed regulations, upon notice, in accordance with the requirements of paragraphs (4) - (6) of Section 3 (c) of this Act. Upon completion of the hearings and consideration of submitted evidence and arguments with respect to any proposed regulation, the Board shall adopt its final action with respect thereto, and shall publish such final action as part of its official regulations. The Board is empowered to modify or revoke from time to time any final action previously taken by it pursuant to the provisions of this section, any such

modifications or revocations, however, to be subject to the procedural requirements of this Act, including notice and hearing.

Sec. 5. Permits for Water Use within Capacity Use Areas: Procedures.--(a) In areas declared by the Board to be capacity use areas no person shall (after the expiration of such period, not in excess of six months, as the Board may designate) withdraw, obtain, or utilize surface waters or ground waters or both, as the case may be, in excess of 100,000 gallons per day for any purpose unless such person shall first obtain a permit therefor from the Board.

(b) When sufficient evidence is provided by the applicant that the water withdrawn or used from a stream or the ground is not consumptively used, a permit therefor shall be issued by the Board without a hearing and without the conditions provided in subsection (c) of this section. Applications for such permits shall set forth such facts as the Board shall deem necessary to enable it to establish and maintain adequate records of all water uses within the capacity use area.

(c) In all cases in which sufficient evidence of a non-consumptive use is not presented the Board shall notify each person required by this Act to secure a permit of the Board's proposed action concerning such permit, and shall transmit with such notice a copy of any permit it proposes to issue to such persons, which permit will become final unless a request for a hearing is made within fifteen (15) days from the date of service of such notice. The Board shall have the power: (1) to grant such permit with conditions

as the Board deems necessary to implement the regulations adopted pursuant to Section 4 of the Act; (2) to grant any temporary permit for such period of time as the Board shall specify where conditions make such temporary permit essential, even though the action allowed by such permit may not be consistent with the Board's regulations applicable to such capacity use area; (3) to modify or revoke any permit upon not less than 60 days' written notice to any person affected; and (4) to deny such permit if the application therefor or the effect of the water use proposed or described therein upon the water resources of the area is found to be contrary to public interest. Any water user wishing to contest the proposed action shall be entitled to a hearing upon request therefor.

(d) In any proceeding pursuant to this section or Section 6 the Board shall give notice with respect to all steps of the proceeding only to each person directly affected by such proceeding who shall be made a party thereto. In all proceedings pursuant to Sections 3 or 4 the Board shall give notice as provided by these sections, and it shall also give notice of all its official acts (such as the adoption of regulations or rules of procedure) which have, or are intended to have, general application and effect, to all persons on its mailing list on the date when such action is taken. It shall be the duty of the Board to keep such a mailing list on which it shall record the name and address of each person who request listing thereon, together with the date of receipt of such request. Any person may, by written request to the Board

ask to be permanently recorded on such mailing list.

(e) All notices which are required to be given by the Board or by any party to a proceeding shall be given by registered or certified mail to all persons entitled thereto, including the Board. The date of receipt or refusal for such registered or certified mail shall be the date when such notice is deemed to have been given. Notice by the Board may be given to any person upon whom a summons may be served in accordance with the provisions of law covering civil actions in the Superior Courts of this State. The Board may prescribe the form and content of any particular notice.

(f) The following provisions shall be applicable in connection with hearings pursuant to this Act:

(1) Any hearing held pursuant to this section or Section 6, whether called at the instance of the Board or of any person, shall be held upon not less than 30 days' written notice given by the Board to any person who is a party to the proceedings with respect to which such hearing is to be held, unless a shorter notice is agreed upon by all such parties.

(2) All hearings under this Act shall be before the Board, or before one or more of its own members or before one or more of its own qualified employees, and shall be open to the public. Any member or employee of the Board to whom a delegation of power is made to conduct a hearing shall report the hearing with its evidence and record to the Board for decision.

(3) A full and complete record of all proceedings at any hearing under this Act shall be taken by a reporter

appointed by the Board or by other method approved by the Attorney General. Any party to a proceeding shall be entitled to a copy of such record upon the payment of the reasonable cost thereof as determined by the Board.

(4) The Board and its duly authorized agents shall follow generally the procedures applicable in civil actions in the Superior Court insofar as practicable, including rules and procedures with regard to the taking and use of depositions, the making and use of stipulations, and the entering into of agreed settlements and consent orders.

(5) The Board, or the duly authorized agent of such Board, may administer oaths and may issue subpoenas for the attendance of witnesses and the production of books, papers, and other documents belonging to the said person.

(6) Subpoenas issued by the Board, in connection with any hearing under this Act shall be directed to any officer authorized by law to serve process, and the further procedures and rules of law applicable with respect thereto shall be prescribed in connection with subpoenas to the same extent as if issued by a court of record. In case of a refusal to obey a subpoena issued by the Board, application may be made to the Superior Court of the appropriate county for enforcement thereof.

(7) The burden of proof at any hearing under this Act shall be upon the person or the Board, as the case may be, at whose instance the hearing is being held.

(8) No decision or order of the Board shall be made in any proceeding unless the same is supported by

competent, material and substantial evidence upon consideration of the whole record.

(9) Following any hearing, the Board shall afford the parties thereto a reasonable opportunity to submit within thirty (30) days or within such additional time as prescribed by the Board, proposed findings of fact and conclusions of law and any brief in connection therewith.

(10) All orders and decisions of the Board shall set forth separately the Board's findings of fact and conclusions of law and shall, wherever necessary, cite the appropriate provision of law or other source of authority on which any action or decision of the Board is based.

(11) The Board shall have the authority to adopt a seal which shall be the seal of said Board and which shall be judicially noticed by the courts of the State. Any document, proceeding, order, decree, special order, rule, regulation, rule of procedure or any other official act or records of the Board or its minutes may be certified by the Director or Assistant Director of the Department under his hand and the seal of the Board and when so certified shall be received in evidence in all actions or proceedings in the courts of the State without further proof of the identity of the same if such records are competent, relevant and material in any such action or proceeding. The Board shall have the right to take judicial notice of all studies, reports, statistical data or any other official reports or records of the Federal Government or of any sister state and all such records, reports and data may be placed in evidence by the

Board or by any other person or interested party where material, relevant and competent.

(g) Any person against whom any final order or decision has been made except where no appeal is allowed as provided by Section 143-215.2 (j) shall have a right of appeal to the Superior Court of Wake County or of the county where the order or decision is effective within thirty (30) days after such order or decision has become final. Upon such appeal the Board shall send a certified transcript of all testimony and exhibits introduced before the Board, the order or decision, and the notice of appeal to the Superior Court. The matter on appeal shall be heard and determined de novo on the transcript certified to the court and any evidence or additional evidence as shall be competent under rules of evidence then applicable to trials in the Superior Court without a jury upon any question of fact; provided, the court shall allow any party to introduce evidence or additional evidence upon any question of fact. At the conclusion of the hearing, the Judge shall make findings of fact and enter his decision thereto. Appeals from the judgment and orders of the Superior Court shall lie to the Supreme Court. No bond shall be required of the Board to the Supreme Court.

(1) Upon appeal filed by any party, the Board shall forthwith furnish each party to the proceeding with a copy of the certified transcript and exhibits filed with the Board. A reasonable charge shall be paid the Board for said copies.

(2) Within fifteen (15) days after receipt of copy of certified transcript and exhibits, any party may file with the

court exceptions to the accuracy or omissions of any evidence or exhibits included in or excluded from said transcript.

(h) In adopting any regulations pursuant to the provisions of Section 4 of this Act, and in considering permit applications, revocation or modifications under this section, the Board shall consider:

(1) the number of persons using an aquifer or stream and the object, extent and necessity of their respective withdrawals or uses;

(2) the nature and size of the stream or aquifer;

(3) the physical and chemical nature of any impairment of the aquifer or stream, adversely affecting its availability or fitness for other water uses (including public use);

(4) the probable severity and duration of such impairment under foreseeable conditions;

(5) the injury to public health, safety or welfare which would result if such impairment were not prevented or abated;

(6) the kinds of businesses or activities to which the various uses are related;

(7) the importance and necessity of the uses claimed by permit applicants (under this section), or of the water uses of the area (under Section 4), and the extent of any injury or detriment caused or expected to be caused to other water uses (including public use);

(8) diversion from or reduction of flows in other water courses or aquifers; and

(9) any other relevant factors.

Sec. 6. Permits for Water Use within Capacity Use Areas:

Duration, Transfer, Reporting, Measurement, Present Use, Fees and Penalties.--No permit under Section 5 shall be issued for a longer period than the longest of the following: (i) ten years, or (ii) the duration of the existence of a capacity use area, or (iii) the period found by the Board to be necessary for reasonable amortization of the applicant's water withdrawal and water using facilities. Permits may be renewed following their expiration upon compliance with the provisions of Section 5 of this Act.

(b) Permits shall not be transferred except with the approval of the Board.

(c) Every person in a capacity use area who is required by this Act to secure a permit shall file with the Board in the manner prescribed by the Board a certified statement of quantities of water used and withdrawn, sources of water, and the nature of the use thereof not more frequently than 30-day intervals. Such statements shall be filed on forms furnished by the Board within 90 days after the adoption of an order by the Board declaring a capacity use area. Water users in a capacity use area not required to secure a permit shall comply with procedures established to protect and manage the water resources of the area. Such procedures shall be adapted to the specific needs of the area, shall be within the provisions of this and other North Carolina water resource acts, and shall be adopted after public hearing in the area. The requirements embodied in the two preceding sentences shall not apply to individual domestic water use.

(d) If any person who is required to secure a permit

under this Act is unable to furnish accurate information concerning amounts of water being withdrawn or used, or if there is evidence that his certified statement is false or inaccurate or that he is withdrawing or using a larger quantity of water or under different conditions than has been authorized by the Board, the Board shall have the authority to require such person to install water meters, or some other more economical means for measuring water use acceptable to the Board. In determining the amount of water being withdrawn or used by a permit holder or applicant the Board may use the rated capacity of his pumps, the rated capacity of his cooling system, data furnished by the applicant, or the standards or methods employed by the U. S. Geological Survey in determining such quantities or by any other accepted method.

(e) In any case where a permit applicant can prove to the Board's satisfaction that the applicant was withdrawing or using water prior to the date of declaration of a capacity use area, the Board shall take into consideration the extent to which such prior use or withdrawal was reasonably necessary in the judgment of the Board to meet its needs, and shall grant a permit which shall meet those reasonable needs. Provided, however, that the granting of such permit shall not have unreasonably adverse effects upon other water uses in the area, including public use, and including potential as well as present use.

(f) The Board shall also take into consideration in the granting of any permit the prior investments of any person in lands, and plans for the usage of water in connection with such lands which plans have been submitted to the Board within

a reasonable time after the effective date of this Act. Provided, however, that the granting of such permit shall not have unreasonably adverse effects upon other water uses in the area, including public use, and including potential as well as present use.

(g) It is the intention of the General Assembly that if the provisions of subsection (e) or subsection (f) of this section are held invalid as a grant of an exclusive or separate emolument or privilege, within the meaning of Article 1, Section 7 of the North Carolina Constitution, the remainder of this Act shall be given effect without the invalid provision or provisions.

(h) Pending the issuance or denial of a permit pursuant to subsection (e) or (f) of this section, the applicant may continue the same withdrawal or use which existed prior to the date of declaration of the capacity use area.

Sec. 7. Violations.--(a) Penalties for violations.-- Any person who shall be adjudged to have violated any provision of this Act shall be guilty of a misdemeanor and shall be liable to a penalty of not less than one hundred dollars (\$100.00) nor more than one thousand dollars (\$1,000.00) for each violation. In addition, if any person is adjudged to have committed such violation willfully, the Court may determine that each day during which such violation continued constitutes a separate violation subject to the foregoing penalty.

(b) In addition, upon violation of any of the provisions of this Act, or the regulations of the Board hereunder, the Director of the Department may, either before or after the institution of proceedings for the collection of the penalty

imposed by this Act for such violation, institute a civil action in the Superior Court in the name of the State upon relation of the Director of the Department for injunctive relief to restrain the violation and for such other or further relief in the premises as said court shall deem proper. Neither the institution of the action nor any of the proceedings thereon shall relieve any party to such proceedings from the penalty prescribed by this Act for any violation of the same.

Sec. 8. Map or Description of Boundaries of Capacity Use Areas.--(a) The Board in designating and the Department in recommending the boundaries of any capacity use area may define such boundaries by showing them on a map or drawings, by a written description, or by any combination thereof, to be designated appropriately and filed permanently with the Department. Alterations in these lines shall be indicated by appropriate entries upon or additions to such map or description. Such entries shall be made under the direction of the Director of the Department. Photographic, typed or other copies of such map or description, certified by the Director, shall be admitted in evidence in all courts and shall have the same force and effect as would the original map or description. If the boundaries are changed pursuant to other provisions of this Act, the Department may provide for the redrawing of any such map. A redrawn map shall supersede for all purposes the earlier map or all maps which it is designated to replace.

(b) The Department shall file with the Secretary of State a certified copy of the map, drawings, description or combination thereof, showing the boundaries of any capacity use

area designated by the Board; and a certified copy of any re-drawn or altered map or drawing, and of any amendments or additions to written descriptions, showing alterations to said boundaries. The filings required by this subsection shall constitute compliance with the requirements of Article 18 of Chapter 143 of the General Statutes.

Sec. 9. Rights of Investigation, Entry, Access and Inspection.--The Board shall have the right to conduct such investigations as may reasonably be necessary to carry out its duties prescribed in this Act, and for this purpose to enter at reasonable times upon any property, public or private, for the purpose of investigating the condition, withdrawal or use of any waters, investigating water sources, or investigating the installation or operation of any well or surface water withdrawal or use facility, and to require written statements or the filing of reports under oath, with respect to pertinent questions relating to the installation or operation of any well or surface water withdrawal or use facility; provided, that no person shall be required to disclose any secret formula, processes or methods used in any manufacturing operation or any confidential information concerning business activities carried on by him or under his supervision. No person shall refuse entry or access to any authorized representative of the Board who requests entry for purposes of a lawful inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper or interfere with any such representative while in the process of carrying out his official duties consistent with the provisions of this Act.

Sec. 10. Rules and Regulations.--The Board may adopt and modify from time to time rules and regulations consistent with the provisions of this Act to implement the provisions of this Act. All such rules and regulations, and modifications thereof, shall be filed with the Secretary of State as required by Article 18 of Chapter 143 of the General Statutes.

Sec. 11. Definitions.--Unless the context otherwise requires, the following terms as used in this Act are defined as follows:

(1) "Department" means the Department of Water Resources, or its successor.

(2) "Board" means the Board of Water Resources or its successor.

(3) "Person" shall mean any and all persons, including individuals, firms, partnerships, associations, public or private institutions, municipalities or political subdivisions, governmental agencies, or private or public corporations organized under the laws of this State or any other state or country.

(4) "Waters" shall mean any stream, river, brook, swamp, lake, sound, tidal estuary, bay creek, reservoir, waterway or any other body or accumulation of water, surface or underground, public or private, natural or artificial, which is contained within, flows through, or borders upon this State or any portion thereof, including those portions of the Atlantic Ocean over which this State has jurisdiction.

(5) "Area of the State" means any municipality or county or portion thereof or other substantial geographical area of the State as may be designated by the Board.

(6) "Consumptive use" means any use of water withdrawn from a stream or the ground other than a "non-consumptive use", as defined in this Act.

(7) "Non-consumptive use" means (a) the use of water withdrawn from a stream in such a manner that it is returned to the stream without substantial diminution in quantity at or near the point from which it was taken; or, if the user owns both sides of the stream at the point of withdrawal, the water is returned to the stream upstream of the next property below the point of diversion on either side of the stream; (b) The use of water withdrawn from a ground water system or aquifer in such a manner that it is returned to the ground water system or aquifer from which it was withdrawn without substantial diminution in quantity or substantial impairment in quality at or near the point from which it was withdrawn; (c) Provided, however, that (in determining whether a use of ground water is non-consumptive) the Board may take into consideration whether any material injury or detriment to other water users of the area by reason of reduction of water pressure in the aquifer or system has not been adequately compensated by the permit applicant who caused or substantially contributed to such injury or detriment.

Sec. 12. Law of Riparian Rights not Changed.--

Nothing contained in this Act shall change or modify existing common or statutory law with respect to the relative rights of riparian owners concerning the use of surface water in this State.

Sec. 13. Codification.--The various sections of this Act shall be given appropriate numbers and codified by the

Attorney General in Article 21 of Chapter 143 of the General Statutes of North Carolina. In the event that the 1967 General Assembly enacts more than one law concerning water resources, which several laws contain identical or substantially identical provisions concerning any matter -- including without limitation, notice and hearing provisions, definitions and penalties -- the Attorney General in codifying said laws is authorized in each such instance to combine said duplicating provisions in a single section, subsection or paragraph, as may be appropriate.

Sec. 14. Severability.--If any provision of this Act or its application to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the Act which can be given effect without the invalid provisions or applications, and to this end the provisions of this Act are declared to be severable.

Sec. 15. All laws and clauses of laws in conflict with this Act are hereby repealed.

Sec. 16. Effective date.--This Act shall become effective upon its ratification.

In the General Assembly read three times and ratified, this the 27th day of June, 1967.

Robert W. Scott
President of the Senate.

Examined and found correct;

Don S. Matheson
For Committee.

D. M. Britt
Speaker of the House of
Representatives