

IV

Services and Facilities - Infrastructure

A. Water System

Though originally served by Brockton's Silver Lake system, Halifax has had its own water system since 1951. By the end of 1999 it served 2564 customers. Practically all are metered. Following recent extensions in the southern part of town, essentially all of Halifax is served and the remaining extensions have been designed for later construction.

Supplies – Halifax's supplies come from four sand and gravel wells, two in the Richmond Park areas south of Plymouth St. and east of Monponsett St., and two on the former YMCA campgrounds off of Lingan St. and close to the West Monponsett Pond. Richmond Park Well #1 is 100' deep, #2 is 60' deep and the original YMCA well is about 193' deep.

The Department has recently developed a second well about 900' south of the original YMCA site. The purpose was not to increase Safe Yield so much as to increase reliability by allowing one well or the other to run part-time. An earlier proposed new source on the Stump Brook downstream of West Monponsett Pond had traces of iron and manganese and was abandoned in favor of the second YMCA Camp well.

Consumption – Consumption over the past few years has ranged from 159,000,000 gallons in 1994 (.435 million gallons/day [MGD]; 52.4 gallons per capita/day for residential uses) to 185,000,000 gallons (.507 MGD) and a per capita consumption of 72 gallons/day in 1998.

Peak day consumption is about twice the average day's consumption. The highest so far is 1.06 MGD pumped one day in June 1999. That month also had the first week consuming more than 6,000,000 gallons.

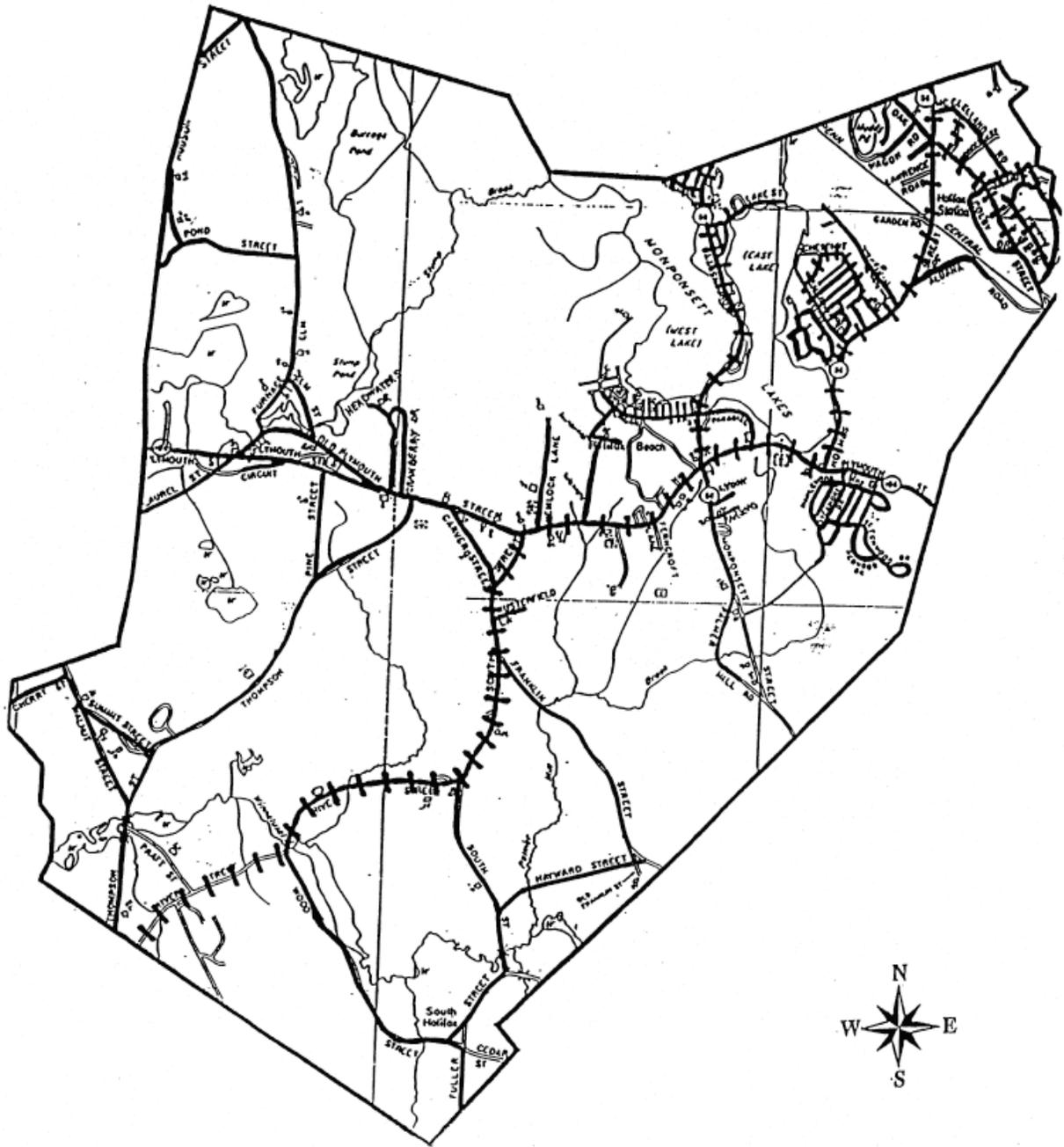
Safe Yield – The Safe Yield of the Richmond Park wells pumping 20 hours a day is .4 MGD (down from .6 MGD several years ago), while the safe yield of the original YMCA well is .7 MGD, for a total of 1.1 MGD. Even without the second YMCA well this gives a safe yield of 2 times an average day and slightly over the worst peak day. To ease peak problems the town has occasionally restricted outside watering.

Distribution/Storage System – The distribution system consists of approximately 39 miles of 8" or larger water mains. Pipes range from 2" on short streets to up to 12" mains and are of either AC (asbestos cement) or C900 plastic construction. Storage is limited to one 500,000 gallon tank just north of Rte. 106 behind the town hall. This gives barely a one average day's storage.

Concerns/Prospects

The town's Water Management Act permit allows withdrawing up to 211,000,000/gallons/year, (an average of .58 MGD) which the Superintendent feels is sufficient for the near future.

Fig IV-1 water lines



- Legend
- Town Water
 - ⊥⊥ Bay State Gas Lines

IV-2

OLD COLONY PLANNING COUNCIL

Town of Halifax Master Plan

The Superintendent is concerned that the new Elm Street/ Pleasant St. well in Hanson will draw on the same underlying source as the YMCA wells and lessen their yield. Hanson and the City of Brockton are developing this well jointly. It is to be used by Brockton until a long-term supplementary supply is in place and then be used by the town. Preliminary studies by Camp Dresser & Mckee, Inc for the proponents concluded that the first YMCA well would be little affected "...since this well, unlike the Pleasant St. site, has only a limited Zone II recharge area, as most of the recharge to the YMCA well comes via induced infiltration from Monponsett Pond. Thus no interference between the public water supplies is expected" (CDM, 1998, Pleasant St. Wellfield Development Environmental Notification Form). This suggests that the second, more distant, YCMA Well then under study would also be unaffected since the pumping was proposed to stop if the pond dropped from a base line of 51'9" to 51' 7," but the ENF does not state this.

Protection

The wells are protected by the required town control of the 400' Zone I radius around each well; by the recently adopted Aquifer and Well Protection District, to a lesser extent, by the Flood Plain Protection and Conservancy Districts, and by the Board of Health's regulations regarding Handling and Storage of Toxic and Hazardous Material and Underground Storage Tanks.

The Aquifer and Well Protection District covers the Zone the surrounding DEP-approved Zone II and I recharge areas for the Richmond Park and YMCA wells. It includes much undeveloped land, agricultural land, and commercial development around the intersection of Rtes. 58 and 106, and much housing near Richmond Park. The following maps (Figures IV-2 and IV-3) indicate the areas of potential hazards identified in the 1995 Halifax Water Supply Protection Plan and Figure IV-4 shows the existing and proposed public water supply well sites and Massachusetts Department of Environmental Protection-designated Zone II recharge areas covered by the bylaw.

The bylaw excludes or limits potentially harmful uses (e.g. auto repair garages and some medical facilities) which could otherwise be allowed in the underlying district; requires special permits for some potentially hazardous uses and limits impervious surfaces. It goes a long way to protecting the town's resources. However, as adopted, the bylaw omits some potentially hazardous uses. It also lacks previously recommended provisions covering "Zone IIIA" areas from which groundwater flows to the Zone II of existing/potential wells and "ZONE IIIB" areas from which surface water flows to Zone II or to the existing/potential surface water supplies, such as Monponsett Pond and Silver Lake.

Recommendations to strengthen and complete the bylaw to meet these concerns and a map of proposed areas of surface water protection are in the Implementation/Development Regulations Chapter below.

Some water resource protection is also supplied by:

Fig IV-2

Fig. IV-2

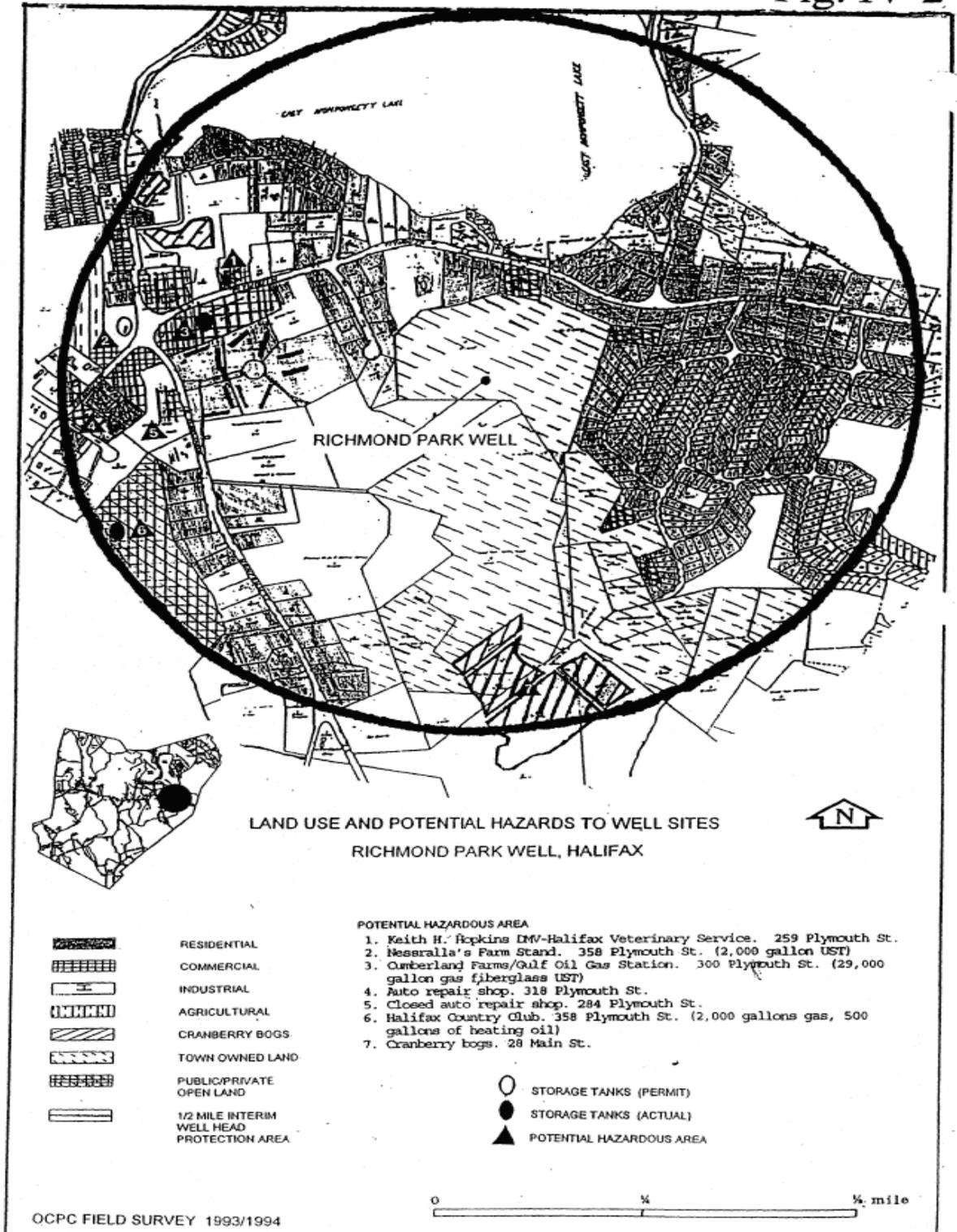
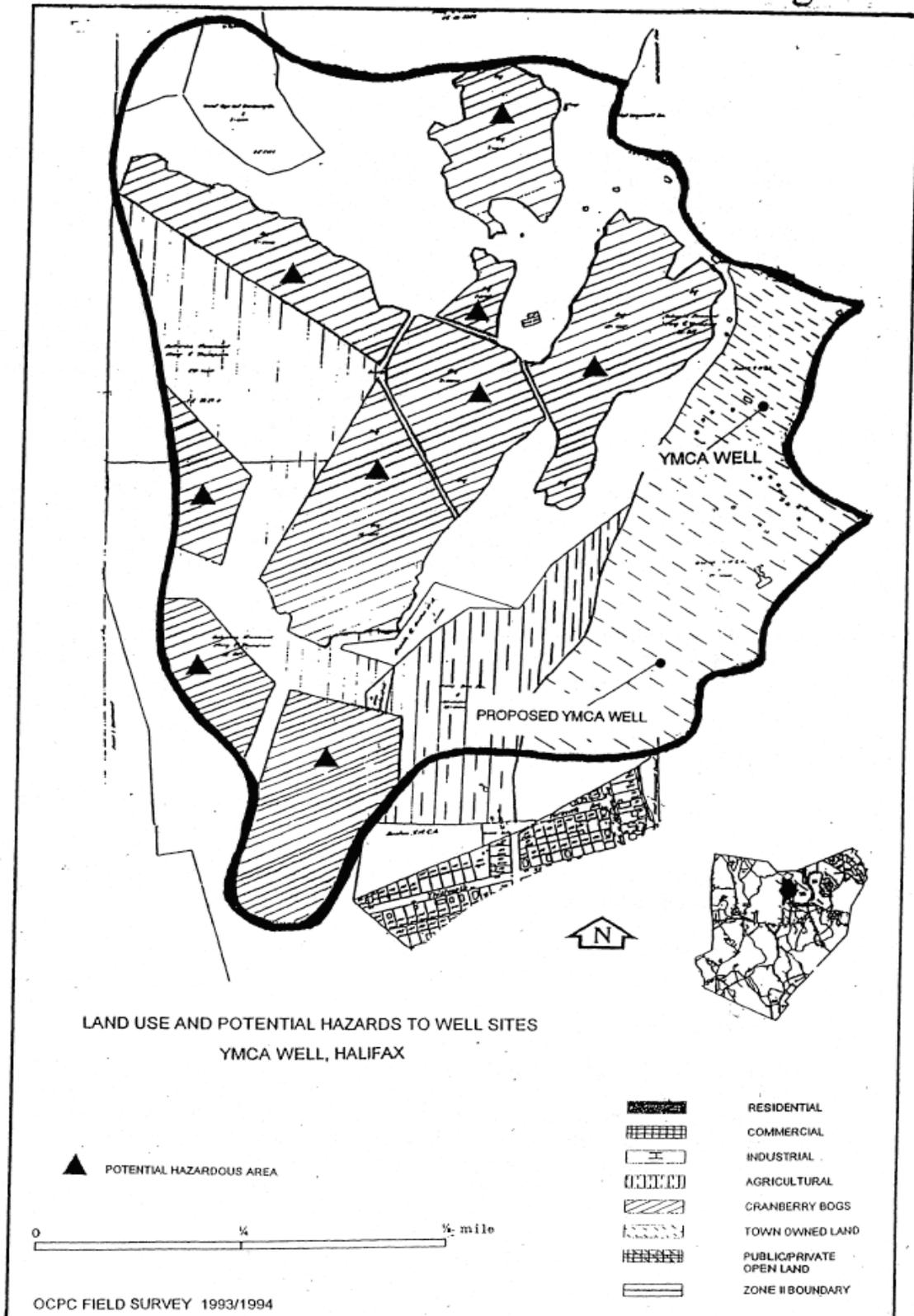


Fig IV-3

Fig. IV-3



- The Floodplain Protection Zoning Bylaw

This overlay district protects against flooding by allowing uses permitted in the underlying district only in conformity with the State Building Code's floodplain requirements and by prohibiting fill, encroachment and construction in the floodway which would increase 100-year levels. It does not directly protect water supplies but it could lessen the danger of contaminated floodwater affecting wells.

- The Conservancy District

This basic district, mapped over major wetlands, ponds and bogs, prohibits most business and industrial uses while allowing major institutions as of right and housing by special permit. As above, it has some protective effects but is not a water supply protection district as such.

- Health Board Underground Storage Tank Regulations

These regulate tanks under the 10,000-gallon state jurisdiction, but over 1000-gallon capacity. They require tank registration and their removal when required by age and condition; and set standards for new tanks. They resemble regulations earlier drafted by the Old Colony Planning Council with EPA/DEP support, but those also covered oil tanks of under 100 gallon capacity.

In addition to adopting the then-proposed Comprehensive Water Supply Protection District and delineating needed Zones II, the 1995 Comprehensive Water Supply Protection Plan made several recommendations, which still need action. These were:

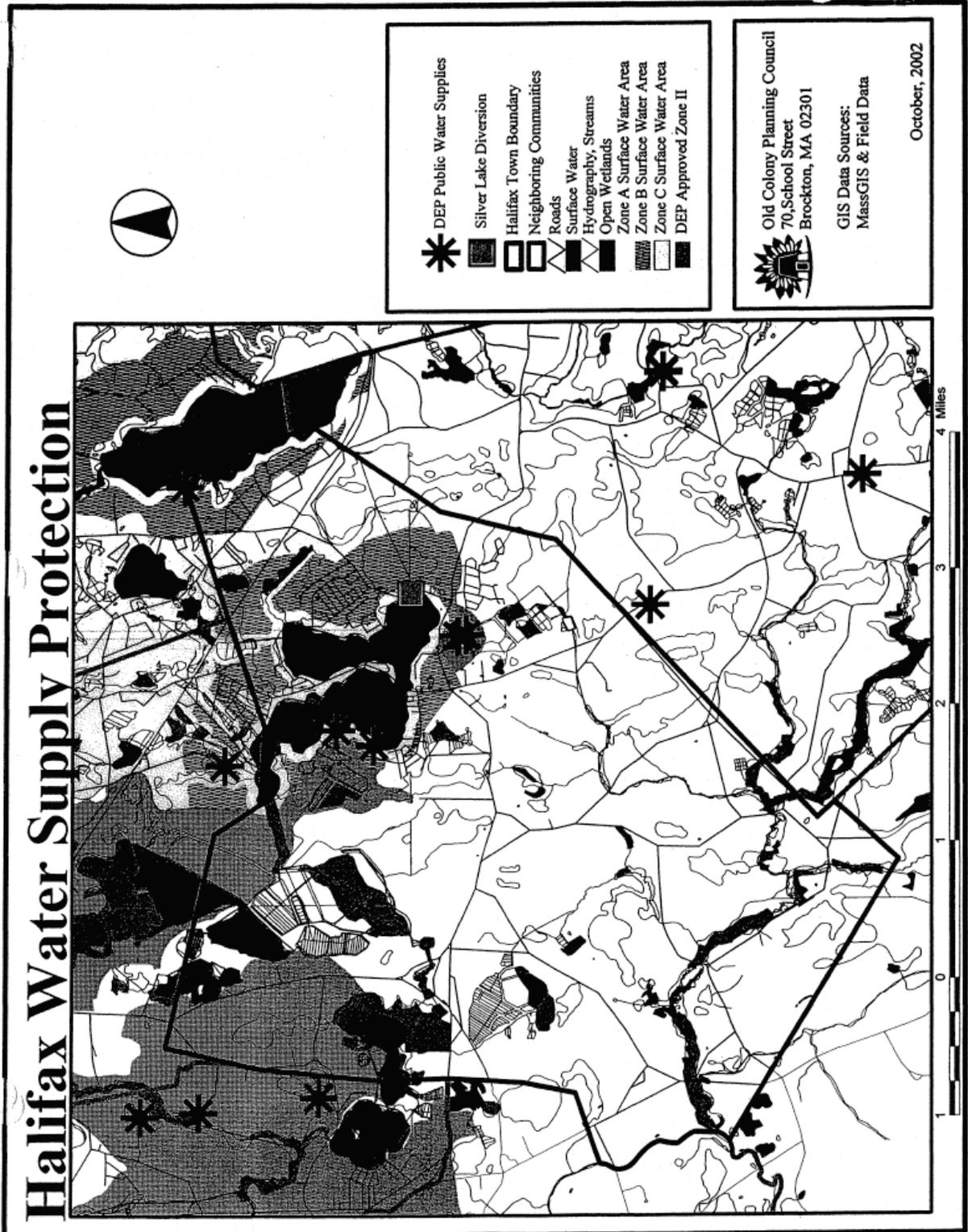
- Adopting the recommended Underground Storage Tank Regulations or extending the Board of Health's regulations.
- Closely examining the effectiveness of the Toxic and Hazardous Materials Regulations to determine the need for further protection.
- Examining opportunities to use Best Management Practices to protect surface water flowing to Monponsett Pond and the Taunton River.

It could also be good to ensure that power boating and other activities on the Pond do not risk contaminating the water or sediments.

Emergency Supplies

Halifax has several sources of emergency supplies. The act establishing the Central Plymouth County Water Supply District (Acts 1964, Chapter 371) entitles all communities, which could otherwise draw on Silver Lake to demand, supplied from the Silver Lake system. However, Halifax uses Brockton's supplies only in an emergency. A gate on Rte. 36 automatically taps Brockton's supplies if Halifax's pressure drops below 75 pounds for any reason; well failure, fire demands, pumps failure, or pipeline break.

Fig IV-4 water supplies and prot. areas



There is also a metered connection with Hanson on Rte. 58, a manually operated gate on Elm St., and gates on Pond St. and Rte. 106 connecting Halifax to East Bridgewater.

Financing

Halifax has had a Water Department enterprise system for many years. This allows the Department to retain all revenues and to earmark surpluses for system improvements. No town tax revenues go to support water service and all surpluses remain within the Department.

Implications/Development Influences

To date, there have been no major water supply related constraints on development. Given sufficient storage the system appears adequate to serve a doubling of population. This reflects consumption of about .5 MGD and a safe yield of over 1 MGD. The OCPC projects growth from the 7,500 of 2000 to 10,100 in 2020, an increase of 34.7%. The revised buildout analysis calculates a theoretical potential population of 13,014, an increase of 73.5%, if all growth is in single-family housing.

At the present consumption of about 72 gallons capita/day, this potential population would consume amount .945 MGD, well within the present safe yield. Even greater growth would be possible through the continued use of private wells in outlying areas, but residents on water lines have a right to tie in.

The greatest constraints are storage to meet emergency needs or to cover maximum day demands. The present .5 million-gallon tank holds one normal day's consumption. A new one million gallon tank would give a combined storage of 1,500,000 gallons; enough for three normal day's consumption or one and a half maximum days consumption at present rates. Assuming that storage for two normal days or one maximum day is sufficient, the added capacity would accommodate a 50% increase in population.

Stronger, more comprehensive water supply protection provisions are recommended, particularly regarding regionally significant surface water and locally important groundwater, which may be affected by nearby surface water. None-the-less, Halifax's present provisions do deal with both present and proposed uses affecting groundwater and should be enough to keep contamination from limiting the town's long-term development potential.

In all, Halifax's relatively abundant underlying resources and developed supplies, its continuing water supply protection program, and its provisions for emergency service and for supply expansion suggest that water supplies should not constrain development for the foreseeable future.

Recommendations

1. Add one million gallons of storage
2. Expand ground and surface water protection as discussed

B. Waste Water Disposal

Development on the town's extensive lands with severe limitations for septic systems (shown on Fig. III-1) can endanger ground and surface water, particularly along the shores of the Monponsett Ponds. At the same time these limitations can constrain development, which might otherwise be appropriate in terms of accessibility and amenities. The danger to both groundwater and surface water is from viral, bacterial and chemical pollution, while surface water is also affected by eutrophication from excess nutrients.

These concerns have led to studies of means of protecting the quality of water supplies such as the Monponsett Ponds and Silver Lake, and of lessening eutrophication, especially near long-established lakeside neighborhoods. Such neighborhoods in Halifax and on the Halifax / Hanson line commonly have houses on small lots served by cesspools, other substandard disposal systems, or tight tanks. The substandard systems threaten ground and surface water while the tight tanks require very expensive frequent pumping.

After some initial exploration by a joint Hanson/Halifax Alternate Sewerage Committee the Halifax Alternate Sewerage Committee worked independently with the engineering firm of SEA. The project surveyed systems "near lakes" and "not near lakes", leaving the Silver Lake neighborhood as "not near lakes". Analyzing the survey and of other data the project found:

1. That existing systems averaged 19 years old near the lakes and town-wide. This signifies little without knowing the distribution of ages and the concentrations of very old inadequate systems.
2. Problems experienced by lakeside residents directly (as opposed to more general water quality impacts) included odors and sewerage backup.
3. Lakeside residents pumped more frequently, every 2.4 years versus every 3.6 years elsewhere, and has most of the systems that were inspected and failed. The greatest concentration of frequent pumpers (17 of 62) was in the relatively new Twin Lakes condominium development, while the most frequently pumped houses were in the nearby Lake St. neighborhood.
4. That lakeside lots were typically smaller; 19,000 sq. ft versus 47,000 sq. ft. elsewhere.
5. There was a greater lakeside interest in connecting to a sewer (56% vs.34%) and Willingness to pay for it (\$5,184 versus \$4,240) than elsewhere, and a common Preference for sewers over innovative on-site systems.

This work led to a proposed system covering neighborhoods on the Monponsett Ponds and Silver Lake as well as public facilities along Plymouth St. in the center of town, and some extensive outlying areas.

The proposed system would have served an estimated 1200 housing units with known or probable disposal problems and another 400 lots holding public buildings or having development potential. The system, estimated at \$2,000,000 to \$2,400,000, would have included a rotating biological contactor-based advanced treatment system with a capacity

exceeding 400,000 gallons / day and 23 miles of sewer lines. It would have discharged the treated effluent to the ground via a spray irrigation system serving the Country Club.

The project was intended to deal with present problems. However service to partially-developed areas could have allowed about 30% more development under present zoning. This reflects the presence of severe septic system limitations on most of the town's vacant land, and regional experience that such limitations on otherwise buildable large lots reduce potential development by about 25%. With sufficient capacity, sewerage could allow much more growth by allowing higher density zoning in appropriate areas.

The Fall 1997 Town Meeting did not fund completion of project planning and the proposal has been inactive.

The Board of Health continues to investigate reported system failures, to vigorously enforce the Sanitary Code (e.g., defining any single cesspool system as failing), and to operate a septic system upgrade loan/betterment program. Last year \$97,000 allowed seven systems to be upgraded or replaced at an average cost of \$13,857.

The Board has found little interest in innovative or alternative systems or dry composting systems, but will permit any system allowed by DEP.

The Board is concerned about monitoring the Monponsett Ponds, but presently relies on tests of finished water done by the Halifax Water Dept. and the City of Brockton. The Board is working with the Department to add the oxygenating gasoline additive MTBE (Methyl tertiary Butyl Ether) to the Department's testing. However it would prefer to test for a range Volatile Organic Compounds (VOCs) and to test water in the Ponds rather than only in the finished potable water. It has sought state funds for infra-red equipment to detect possible septic leachate contamination in the Ponds. This was refused because none of beaches were open to the general public.

The reported need for improved treatment is likely to remain since few of the lakeside homeowners have sufficient good land to replace or upgrade their present systems. There may be opportunities to affect the problems of potential lakeside system failures and of potential surface water pollution through strategic pond level management by the City of Brockton under the authority of the Central Plymouth County Water Supply District Act.

Recommendations

1. Expand testing programs to include MTBE and any other critical contaminants
2. Work with the forthcoming DEP-supported Robbin's Pond Outlet Sub-Watershed Source Water Protection Project.
3. Inform owners with marginal systems of Innovative and Alternative systems and of dry Composting systems, which release no wastewater.
4. Continue working to collect and treat flows from high-risk areas
5. Consider using smaller local plants to meet the needs of distinct critical areas such as

the Twin Lakes Development and Lake St.

6. Carefully relate any proposed sewerage, which would facilitate development of Outlying areas to appropriate density patterns in those areas, and to complementary low-density development or protected open space in other areas.

C. Public Safety Facilities

1. Police Department

After long operating out of very cramped quarters in a 2400 square-foot building originally designed as house, the Halifax Police Department is moving to a 9000 square-foot new station converted from the former Center School. The new station remains central to the town, being a few doors down from the present station in Halifax's civic center.

This solution was chosen after site limitations precluded a large, 26,540 square-foot combined Police and Fire Public Safety building at the Center School site, and cost precluded a second option. This was to triple the size of the present police station and build a new 15,887 square-foot fire station at the present site for a total cost of about \$4,800,000.

While the new station has some limitations on public use due to security requirements and some inflexibility related to the multi-story layout, it is expected to be adequate for the foreseeable future. And if more space is needed, the site is understood to have room for expansion.

2. Fire Department

The present 6900 square-foot, two-story Fire Station was built by vocational school students in 1961/62. It is on Rte. 106, central to the commercial center and to the town as a whole. It originally housed both departments though it lacked holding cells. It has been remodeled and expanded to 7890 square feet to improve equipment storage and maintenance space, and living, training, administrative and support space. The first floor has gone from 5985 square feet to 6400 square feet, while the smaller second floor has gone from 915 square feet to 1490 square feet. As with the new police station, the \$570,000 project is expected to meet the Town's Fire and ambulance space needs for the foreseeable future.

As long as the town needs only one fire station, the present site is quite appropriate. If the station were to be replaced in 15 to 20 years two stations at opposite ends of the town could provide even better coverage and lower response times. The Chief suggests that appropriate sites would be on Rte. 36 in the northeast corner of town and near the junction of Rtes. 105 and 106. This would be near the town center, but closer to the growing southwestern section of town.

Recommendation

Have the Land Acquisition Committee or successor body work with the Fire Chief to define optimal sites; examine present town holdings for potential sites, and if none are suitable, consider early acquisition of suitable sites.

3. Highway Department.

The present highway barn is large, but lacks complete maintenance facilities and adequate support space. In addition, the salt shed is large but is unable to hold all of a season's sand and salt. The Highway Barn is to be expanded by 7400 square feet at a cost of \$500,000. This will add equipment storage and maintenance facilities such as a wash bay and a lift as well as better office and support space. The grounds also include a very extensive leaf and brush composting operation. Other solid wastes are handled at the town's transfer station at the western end of Rte. 106. The Department expects these facilities to meet its needs for the foreseeable future.

D. Schools

Overall

Halifax is part of the larger Silver Lake Regional School District consisting of Halifax, Kingston, Pembroke and Plympton. The District has one Superintendent overseeing all of the schools and an eight-member school committee setting policy for the junior high school and high school. Halifax and other towns have elected school committees setting policy for the local elementary schools.

The District operates a high school and a nearby administration building on Rte. 27 in Kingston, a junior high school on Learning Lane in Pembroke, three elementary schools in Pembroke, and one each in Plympton 3 elementary schools in Pembroke, and one each in Plympton, Kingston and Halifax, along with the "Old Junior High" on Rte. 27 in Pembroke. This houses various special education programs. Comparative enrollments from 1997 to 2000 are shown on Table IV-1.

Pembroke, which supplies about 45% of the districts students, is withdrawing from it. The town is expected to keep the three elementary schools and the current junior high and a former junior high which are within its boundaries. It plans to use the former junior high as a junior high, and to convert the current junior high to a high school. This would leave the high school in Kingston with abundant long-term capacity for the 3 smaller towns referred to as the "Tri-Town" group, and to require a new junior for them.

The Halifax elementary school is located across Route 106 from the Town Hall and contiguous to the new library. The town completed renovating and expanding the

Table IV-1 2002

building in September, 1994 with 76% of the cost coming from state aid. The elementary school's capacity has been estimated at between 700 and 800 with class sizes ranging from 15 to 27 students.

Enrollments have been rising, but with considerable year-by-year fluctuation. They went from 641 (9.8% of the town's population) in 1990 to 747 in 1999 (9.7% of the 2000 population), dropped to 705 (9.4% of the population) by 2000, rose to 713 in 2001, and then dropped to 706 in 2002. See Table IV-2. showing the distribution by grade as of 2002. At 747 the Elementary School Committee reported "approaching capacity". At the 9.7% of the population used below, the OCPC-projected 2020 population of 10,100 would have 980 elementary students, requiring added capacity.

The Junior High (capacity – 1150) had 948 students in 1995, 1114 in 2000 including 234 from Halifax, and 1092 in 2002 including only 182 from Halifax. To ease long-term pressures, the School District moved the ninth graders to the High School by 1995 and installed modular classrooms to handle the increase. The number fluctuates since Halifax's 234 students in 2000 were a 25.1% increase over the 187 in 1995, but the total dropped to 182 by 2002.

In 2000 the average elementary grade enrollment, 569, was larger than junior high average of 557 suggesting growth. As of 2002, Halifax's elementary grades averaged 101 compared to 91 in the junior high still suggesting growth. However without Pembroke the district-wide average elementary grade had dropped to 310 indicating reduced short-term needs for junior high space.

The high school itself has a capacity of to 2550 with recently added modular classrooms and has 1808 students a 2.4% increase over 2000's 1765. students.

These include 369 students from Halifax, 15.7% over 2000's 319.

Continuing short-term growth in high school enrollment is suggested in the progression of grade sizes on Table IV-1. As of 2002 the high school grades average 452 while the Junior High grades average 541. On the other hand the average elementary grades feeding the junior high and high school had dropped from 569 in 2000, and 571 in 2001 and then to 310 in 2002. due to the removal of students from Pembroke Thus high school capacity should not be an issue in the near future as discussed below.

In any case enrollments rarely rise in direct proportion to the larger grades in the early high school years. As the District's Business Manager points out, enrollments per grade typically decline over the four years as more students transfer to parochial schools, charter schools, or vocational/technical schools, or drop out, than enter the system.

Continued local population growth is likely as development continues. Yet while one might expect the added elementary school children to exceed the town-wide rate of one student or every 3.5 units since new houses are often bought by young growing families, there has been little sustained increase since 2000.

Trends

Long Term Prospects

Overall population growth is likely to push the Halifax Elementary School's enrollment further beyond its capacity. Assuming that 9.7% of the total population is in elementary school (a point between the 9.8% of 1990 and the 9.4% of 2000), OCPC's projected 2010 population of 10,100 would include 980 public elementary school students and the Council's projected 2020 population of 10,767 would include 1044 elementary students. This is well beyond any estimated capacity, but is too little to support an efficiently sized new school.

This study's build-out population of 11,223 would need 1090 spaces. The higher Executive Office of Environmental Affairs (EOEA) build-out of 13,144 (assuming use of wetland and flood plain to meet lot requirements which is prohibited under Halifax's zoning) would require 1275 spaces. Assuming 700 students at the present elementary school, these build-outs would support a small new school ranging from 390 to 575 students. They would not support the four neighborhood schools (Elm St., South St., Thompson St. and Holmes St.) recommended in 1964. These reflected a high-end buildout of over 19,000 persons and close to 2000 students.

Either expanding the present Elementary School or building one new school could provide the needed capacity. Expansion would avoid duplication of administrative staff, support facilities, and bus routes, and capitalize on the present investment. Building a new neighborhood school and playground could minimize transportation to that school and provide a neighborhood focus.

It appears to be most feasible in the relatively high-density Holmes St. neighborhood. Here all but the neighborhoods beyond Oak St. would be within a one-mile walk, given adequate sidewalks. At the same time, the extensive wetlands, flood plain and septicly limited soils suggest that only moderate further growth is likely in the previously recommended Thompson St. area. If growth does support a Thompson St. area school, a site near the Thompson St., Summit St., Walnut St. triangle would be worth examining.

Continued growth in junior high enrollment at the 1995 to 2000 rate of 39 students per year would have had the present junior high school 42 students beyond its 1150 capacity by 2002. The actual 2002 enrollment of 1092 shows the difficulty with such projections, but the larger following classes on Table IV-1 do suggest a short-term increase. With an estimated mid-range 2.8% of the population in junior high school, the projected 2010 tri-town population of 24,536 would include about 690 junior high school students, while the projected 2020 population of 27,629 would produce 774 students. These suggest the size of the needed future school.

Future near-term and long-run capacity at the high school seem quite adequate. The long-run needs are estimated by applying a conservative 5% estimate of the high school's proportion of the total population (rounded up from the 2000 figure of 4.25%) to the projected Tri-town Population. The projected 2010 population of 24,536 gives an enrollment of 1230, while the 2020 projection of 27,629 gives an enrollment of 1380.

Kingston provides over half of the total students and nearly half the secondary school students, (see Table VI-2). It is projected to still have a larger population in 2010 (12,522) than Plympton and Halifax combined (12,014) and to be almost as large (13,805 vs. 13,824) in 2020. Accordingly the new junior high school is appropriately proposed to be in Kingston adjacent to the high school. However, if Kingston's growth and location lead it to withdraw in the future, a new junior high would be better sited somewhere central to Halifax and Plympton and readily accessible to each. The tri-town group examined such a site on Ch 61a land west of Rte.58 on the Halifax / Plympton line but land costs and wetland soil conditions made the site next to the High School more feasible.

If Kingston kept the high school after such a departure, Halifax and Plympton would need to create or find a replacement. At even the projected 2020 combined population of 13,824 the 2 communities could support only a small high school of about 690 students. If this could not offer sufficient depth and breadth of instruction and supportive programs / facilities. the two towns might want to combine with an adjacent third community to create larger school..

Implications

In the short-run, school capacities will not directly constrain Halifax's growth. However continuing local growth will require expanded elementary capacity; the withdrawal of Pembroke is requiring a new junior high; and any eventual withdrawal of Kingston would require replaced high school capacity.

While the concept of neighborhood schools is appealing, even the maximum buildout growth could barely support one additional elementary school within Halifax. The needed added capacity could come from either one new school in the northeastern or southwestern corner of the town, or expansion of the present new Halifax Elementary School.

Recommendations:

1. Reconsider the applicability of the earlier master plan suggestion that Halifax have several elementary schools (to reduce transportation needs and to give neighborhoods multi-purpose centers) to present reduced growth expectations.
2. Investigate a possible new elementary school site in the northeastern or southwestern corners of the town, such as:
 - On wooded upland east of Holmes St. across from Twin Lakes Drive and west of Peterson's Swamp
 - In the Summit St./ Thompson St./ Walnut St. triangle.

3. Examine ways to expand the present Halifax Elementary School, by adding a floor, or building a 2 story wing downslope behind the building, thereby increasing its energy efficiency and preserving more of the site's open space
4. Consider ways of meeting high school needs if/when Kingston leaves the system, possibly by joining with a third community to build a bigger high school with more offerings, potentially near the near the previously studied Monponsett St. Junior High School site.