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December 24, 2002

BY FEDERAL EXPRESS

Hon. Vernon A. Williams
Secretary, Surface Transportation Board
Mercury Building, Room 700
1925 K Street, N.W.
Washington D.C. 20423

Re: **Finance Docket No. 34281**: LB Railco, Notice of Exemption pursuant to 49 C.F.R. §1150.42 (filed November 18, 2002)

Dear Secretary Williams:

Enclosed for filing please find the original and ten copies of the Town of Millbury's Petition to Revoke Exemption, with exhibits and attachments, which I am submitting on the Town's behalf as its legal counsel in the above proceeding.

Thank you for your attention to this matter.

Very truly yours,

John W. Giorgio

JWG/JJG/eon
Enc.
cc: Board of Selectmen
John F. McHugh, Esq.
Mary Jude Pigsley, Esq.
Mr. Michael Creasey
Stephen M. Richmond, Esq.
178224/MILL/0045

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December 31, 2002

BY FEDERAL EXPRESS

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SURFACE TRANSPORTATION BOARD

Hon. Vernon A. Williams
Secretary, Surface Transportation Board
Mercury Building, Room 700
1925 K Street, N.W.
Washington D.C. 20423

Re: **Finance Docket No. 34281**: LB Railco, Notice of Exemption pursuant to 49 C.F.R. §1150.42 (filed November 18, 2002)

Dear Secretary Williams:

Enclosed please find a check for $150.00 to cover the filing fee in the above-referenced matter. I have enclosed a copy of the previous letter dated December 24, 2002, and Petition to Revoke Exemption as a reference.

Thank you for your attention to this matter.

ENTERED
Office of Proceedings
JAN 02 2003
Part of
Public Record

Very truly yours,

John W. Giorgio

JWG/JJG/bp
Enc.
178558/mill/0045

FILED
JAN 0 2 2003

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BEFORE THE
SURFACE TRANSPORTATION BOARD

FINANCE DOCKET NO. 34281

LB RAILCO, INC.
- LEASE AND OPERATION EXEMPTION -
PROVIDENCE AND WORCESTER RAILWAY COMPANY

TOWN OF MILLBURY'S PETITION TO REVOKE EXEMPTION

The Town of Millbury, Massachusetts (the "Town") hereby petitions the Surface Transportation Board ("Board"), pursuant to 49 U.S.C. §10502(d) and 49 CFR Part 1121, to revoke the exemption asserted by L.B. Railco, Inc. ("LB Railco") in the Notice of Exemption under the above docket number. As reasons in support of its Petition, the Town states that: (1) the facility that LB Railco proposes to operate (the "Facility") does not constitute "transportation provided by [a] rail carrier" and therefore is not subject to the exclusive jurisdiction of the Board under the terms of 49 U.S.C. §10501 and to the exemption process established by the Board pursuant to 49 U.S.C. §10502; (2) even assuming, arguendo, that the Facility is subject to the Board's jurisdiction, the Notice of Exemption must be revoked for failing to provide sufficient information on potential significant environmental impacts, or at a minimum the stay imposed by the Board must be stayed until the Board has completed the environmental impact review process; and (3) LB Railco's submissions are inaccurate and misleading in numerous respects, and the

Notice of Exemption should therefore be declared as void ab initio, pursuant to 49 CFR §1150.42(c).

The Town previously submitted to the Board its Motion to Stay Effectiveness of the Notice of Exemption ("Town's Motion"). In its Motion, the Town advised the Board that this Petition would be forthcoming and that the Petition would address the environmental issues that LB Railco had ignored or minimized in its Notice of Exemption. Attached to this Petition is Exhibit 1, an Environmental Assessment of the Facility ("Assessment"), prepared for the Town by the engineering firm of Camp, Dresser & McKee ("Consultant"). As the Assessment demonstrates, the proposed Facility poses significant risks of adverse impacts on environmental and historic resources, and its construction and operation would violate municipal and state laws and regulations designed to protect the environment. LB Railco has yet to fulfill the Board's procedural requirements for assessing these risks. To fulfill its own responsibilities under the National Environmental Policy Act ("NEPA"), 42 U.S.C. §4332, and under the Federal statute that confers National Heritage status on the river adjacent to the Facility, the Board should (i) order LB Railco to prepare and file an Environmental Report ("ER"), (ii) prepare an Environmental Assessment ("EA") under the direction of the Board's Section of Environmental Analysis ("SEA"), and (iii) on the basis of that EA, order LB Railco to prepare an Environmental Impact Statement ("EIS") that fully responds to the issues identified in the EA. Until these studies are completed and made available for public review and comment, and pending a final decision by the Board in response to these studies, LB Railco must not be allowed to proceed with the unregulated

construction and operation of the Facility, and therefore the Board's stay of the Notice of Exemption must remain in effect.

PROCEDURAL BACKGROUND

On November 18, 2002,[1] LB Railco filed the "Notice of Exemption Pursuant to 49 C.F.R. §1150.42" ("Notice of Exemption" in this matter. On November 22, 2002, the Board issued its "Decision" whereby the Board stayed the effectiveness of the Notice of Exemption until further order of the Board. The state purpose of the stay was to allow LB Railco to provide further information on "significant environmental concerns" raised by prior correspondence from Congressman Richard E. Neal, the Department of the Interior ("DOI"), and the Blackstone River Valley National Heritage Corridor Commission ("Corridor Commission"), and to allow the Board time to assess the further information to be submitted by LB Railco. Also on November 22, having not yet learned of that day's Decision, the Town filed the Town's Motion, and the Massachusetts Department of Environmental Protection ("DEP") filed its Motion to Reject the Notice of Exemption ("DEP's Motion"). On December 10, LB Railco filed its Reply to the Town's Motion and DEP's Motion ("Reply"), by which LB Railco requested that the Board deny the Town's Motion and DEP's Motion and lift the stay imposed in the Decision. On December 17, the National Solid Wastes Management Association ("Association") filed its Motion to Dismiss Notice of Exemption ("Association's Motion").

[1] Dates shown are the dates on which the parties submitted documents to the Board via Federal Express or other next-day delivery services.

ARGUMENT

I. The Board Lacks Jurisdiction over the Facility, Which is a Solid-Waste Transfer Station Whose Operation Is Not Integral to the Ability of a Railroad to Provide Transportation Services.

By filing the Notice of Exemption, LB Railco has asserted that the Facility constitutes "transportation by rail carrier," over which the Board has exclusive jurisdiction pursuant to 49 U.S.C. §10501(a)-(b). However, the Facility does not come within the scope of rail operations that are subject to the Board's jurisdiction, because it is not an operation that is closely related or integral to the provision of rail services. The objectives of national transportation policy will not be advanced by allowing the operator of a solid waste transfer station to evade the comprehensive scheme of local and state regulation to which similar competing facilities are subject, through the subterfuge of locating the transfer station adjacent to a railroad line. Judicial decisions and prior decisions by this Board concerning similar activities support revoking the Notice of Exemption on the basis that the Facility is not "rail transportation."

This Board has recognized that not all business facilities located adjacent to rail lines or otherwise on railroad property are elements of "rail transportation." Rather than allowing any enterprise so located to shelter itself from generally applicable state and local regulation, this Board has declared: "To come within the preemptive scope of 49 U.S.C. 10501(b) . . . these activities must be integrally related to the railroad's ability to provide rail transportation services." Hi Tech Trans., LLC. – Petition for Declaratory Order – Hudson County NJ, STB Finance Docket No. 34192 (Nov. 20, 2002), slip op. at 3 (emphasis added). In particular, the Board has held that processing and manufacturing activities located on railroad property but not "integrally related to the provision of

interstate rail service" or "part of a railroad's ability to provide transportation services" are not under the Board's jurisdiction but are instead subject to local and state regulation to the same extent as if they were located on non-railroad property. Borough of Riverdale – Petition for Declaratory Order – The N.Y. Susquehanna and Western Ry. Corp., STB Finance Docket No. 33466 (Sept. 10, 1999), slip op. at 9. Likewise, in Florida East Coast Ry. Co. v. City of West Palm Beach, 266 F.3d 1324 (11th Cir. 2001), the Court held that a distribution center for aggregate construction materials located on property leased from a railroad was not shielded from local zoning by the Interstate Commerce Commission Termination Act ("ICCTA"), 49 U.S.C. §10101 et seq. Notwithstanding that the materials were supplied to the distribution center via the adjacent rail line, the Court found that the distribution activities "serve no public function and provide no valuable service to [the railroad]": the interstate functioning of the railroad industry, and federal railroad policy objectives, were not impeded or frustrated by local zoning regulations of general applicability enforced against a "private entity leasing property from a railroad for non-rail transportation purposes[.]" Id.

The local and state regulations that LB Railco seeks to preempt have no deleterious effect on the ability of a railroad to provide transportation services. Neither the Town nor DEP seeks to regulate activity on the rail line itself, or to impose a competitive disadvantage on railroads vis-à-vis other transportation modes. As indicated in the Association's Motion, the imposition of a uniform regulatory system for transfer stations does not preclude the use of rail transport by solid waste handlers whose facilities are not located adjacent to railroads.[2]

[2] Demonstrating that track-side operations are not essential to use of rail for solid-waste transport, LB Railco itself proposes to handle containerized waste—i.e., materials processed at

In this instance, the Facility is not "integrally related" to a railroad's operation or necessary for a railroad's provision of services; it is simply a railroad customer. As Florida East Coast Ry. demonstrates, an operation may provide an economic benefit to a railroad without being necessary to the railroad's ability to provide service, and if so, the operation is not subject to the Board's jurisdiction. The Facility's presence on property leased from the railroad that owns the adjacent rail line does not shield the Facility, or its operator, from regulation generally applicable to similar operations.

Further, on the basis of its submissions, LB Railco's assertion to be functioning in this instance as a "rail carrier" is highly suspect. A "rail carrier" is defined at 49 USC §10102 as "a person providing common carrier rail transportation for compensation . . . ." LB Railco's filings are vague as to the extent of LB Railco's legal interest in, and control over, the trains that will transport the wastes from the Facility to their ultimate destination and the rail line or lines over which the trains will pass. Although LB Railco states in the Notice of Exemption (at "Operation of the Property") that it "will operate the subject line and service utilizing the services of Providence and Worcester Railroad Company and others[,]" it states in its Reply (at p.10) that "the transaction includes only the transfer of a 750' existing track . . . from one railroad to another[,]" and (at p.11) that the section of track is a siding. This suggests strongly that LB Railco's involvement with the rail line is limited to leasing (not acquiring) the siding immediately adjacent to the Facility from the Providence and Worcester Railroad ("P&W"), and that the intrastate and interstate movement of the loaded rail cars from trackside in the Town to their disposal sites will be accomplished wholly by P&W or other operating railroads, not by LB Railco. If this is

other locations and transported to the Facility by truck for direct transfer to rail transport without on-site handling.

the case, LB Railco's status as a "rail carrier," with its consequent assertion of preemption for its solid-waste Facility, is based entirely on the "operation" of a 750-foot-long railroad siding. The Board should reject such a flagrant absurdity.

Even if LB Railco has a more significant role in the rail transport of its wastes than suggested by its filings, the decisions described supra do not support preemption for its core business: the operation of the Facility. The decisions make clear that railroad transport of materials on behalf of a private entity does not establish preemption for that entity's operations. Thus, if P&W or another railroad company transports the wastes under contract with LB Railco, the Facility is subject to local and state regulation. So, too, if LB Railco controls the transport more directly: preemption should not depend on whether the separate functions of waste handling and transport are managed by one corporate entity or by two. The objectives of Federal transportation policy expressed in 49 U.S.C §10101, including the assurance of effective competition between and among rail carriers and other modes, are not advanced by allowing a solid waste facility operator's eligibility for preemption to hinge on such an artificial distinction.

II. The Notice of Exemption Should Be Revoked, Because It Fails to Provide the Environmental Analysis That Is Required by the Board's Regulations and That Is Necessary to Enable the Board to Meet Its Own Statutory Responsibilities.

In its Decision, the Board stated that the Notice of Exemption "contains insufficient information to enable the Board to determine the extent to which environmental review is required." The Board made this finding on the basis of letters from DOI and the Corridor Commission which, the Board stated, "have raised significant environmental concerns," notwithstanding LB Railco's unconditional assertion in the Notice of Exemption that "this transaction will have no adverse environmental effect."

The Board has subsequently received DEP's Motion, the Town's Motion, and the Association's Motion, which demonstrate that the Board was correct to stay the Notice of Exemption for insufficient information. LB Railco's Reply raises more questions than it answers, and demonstrates LB Railco's unwillingness to meet the environmental reporting requirements and observe the project planning process that is mandated by the Board's regulations. In the absence of an ER from LB Railco (which denies that it is even required to prepare one), the Town presents the attached Consultant's Assessment (Ex. 1), which identifies numerous areas of significant concern that require the Board's closer scrutiny through the Board's preparation of an EA. Pending that analysis, and a decision by the Board as to whether an EIS is required to address the Facility's significant impacts, the Board should revoke the Notice of Exemption, or at a minimum continue the stay that is now in effect.

LB Railco's second filing is not, in title or content, a response to the Board's Decision and its implicit request for the environmental information that was lacking in the Notice of Exemption. Instead, LB Railco has styled its second filing as a Reply to the Motions filed by DEP and the Town. Indeed, LB Railco continues to insist that Board should have been satisfied with the information contained in the Notice of Exemption, and even denies that the Facility is subject to the Board's environmental reporting requirements contained in 49 CFR Part 1105, particularly §§1105.6 and 1105.7. (Reply, at p. 10.) As the Board's Decision recognizes, the Notice of Exemption did not provide sufficient information to enable the Board to meet its responsibilities, as a Federal agency, under NEPA and other Federal environmental laws. See 49 CFR §1105.1.

Those responsibilities apply to Board "actions," including decisions on notices of exemption. 49 CFR §1105.4-7.

The Board should explicitly require LB Railco to produce an ER, as the basis for the preparation of an EA by the SEA[3] An EA is warranted here by the potential that significant environmental impacts will result from the construction and operation of the Facility. As pointed out in the Town's Motion, LB Railco's submissions to the Town and DEP indicate that truck traffic to the Facility will exceed the threshold level set forth at §1105.7(e)(5)(i)(C) for the filing of an ER and the preparation of an EA.[4] Furthermore, the preparation of an ER may be ordered on the basis of the individualized determination provided for in §1105.6(d), by which the preparation of an ER and an EA may be required for "a particular action [that] has the potential for significant environmental impacts[,]" in order for the Board to decide whether a full EIS is required. In this instance, the Board has already indicated, in the Decision, its awareness of that potential on the basis of correspondence from DOI and the Corridor Commission, and the subsequent filings by the Town, DEP, and the Association have demonstrated the correctness of the Board's initial perception. Among the criteria for determining if a Federal action will "significantly" affect the environment are "whether the action

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[3] As set forth in 49 CFR §1105.4(g), an Environmental Report may be in the form of a proposed draft EA or proposed draft EIS. Given LB Railco's obvious reluctance to recognize its environmental reporting requirements, the Town urges the Board to ensure a wholly independent preparation of the EA under the direct supervision of the SEA.

[4] LB Railco argues in its Reply (at p.10) that the environmental reporting requirements of §§1105.6 and 1105.7 do not apply to its Notice of Exemption, because the proposed "transaction," as it involves a Class III carrier, arises under 49 USC 10902, not 49 USC 10901. As discussed supra, the Town disputes that LB Railco is a rail carrier of any sort for purposes of the Facility. Regardless, LB Railco's interpretation of Part 1105 would have the anomalous result that the preparation of ER's and EA's would depend on the overall size of the carrier, not the significance of the impact associated with the particular project. Such an interpretation would clearly be contrary to the purpose of Part 1105 and the Board's statutory responsibilities to assess the potential environmental impacts of its actions.

threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment." (40 CFR 1508.27(b)(10).) The Facility clearly threatens such violations.

Section 1105.7(e) lists the information that should be included in an ER. A comparison of LB Railco's filings with the Consultant's Assessment and the other submissions received by the Board reveals that LB Railco has failed to provide the Board with the information normally sought in an ER as the basis for an adequate EA. The following items should be of particular concern to the Board:

(1) LB Railco has not adequately described the proposed action, and it has refused to consider alternatives. LB Railco has not presented engineering and site plans at a scale and level of detail that would be required by the Town for any comparable project. LB Railco has also been vague as to the nature and terms of its agreements with P&W and other railroads. The Board should require the submission of site plans and other supporting materials that would ordinarily be required by applicants for local and state land-use and environmental permits, and of all leases and contracts for the operation of the Facility and the rail transport of generated materials. Further, the Board should reject LB Railco's refusal to consider alternative locations for the Facility (Reply at p. 5), and instead require LB Railco to "describe any reasonable alternatives to the proposed action" (§1105.7(e)(1)), including a "no-build" alternative.

(2) LB Railco has not analyzed regional and local transportation impacts. LB Railco has provided an estimate of daily truck traffic, but has not presented the market analyses or transportation studies needed for evaluating the accuracy of these estimates on a short- or long-term basis. LB Railco has not indicated the regional origins of this

traffic, in order to assess the effects on particular roadways. Further, the Association's Motion indicates that LB Railco's avoidance of environmental controls may give it competitive advantages that will result in traffic being diverted from other facilities closer to the origin of the handled wastes. The potential transportation impacts of such diversions should be analyzed.

(3) The Facility is inconsistent with local and regional land use plans, and violates municipal zoning by-laws. As discussed in the Assessment, the Facility does not comply with the Town's Master Plan in several respects. The Corridor Commission has made clear its concerns, which the Town shares, that siting the Facility adjacent to the Blackstone River and a recently constructed bikeway is undesirable as a matter of regional land use policy and is inconsistent with the desired uses for the Corridor. Contrary to LB Railco's assertions, the Facility, as a solid-waste operation, is not an allowed use at its site, either as a matter of right or by special permit. (See Town Zoning By-Law, Secs. 25 and 36.3, in Attachment F to the Assessment, and discussion in the Assessment.) The Facility would not be excepted from the current provisions of the Zoning By-Law, because it does not qualify for treatment as the continuation of a pre-existing nonconforming use under the provisions of both the Town's Zoning By-Law, Sec. 16.3, and the Massachusetts Zoning Act, M.G.L. c. 40A, §6.[5]

(4) LB Railco has not assessed the potential impacts of the Facility (or a no-build alternative) on transportation modes and on recycling. Because LB Railco has not provided sufficient information on the source of the wastes to be handled at the Facility

[5] The lumber yard referred to by LB Railco was discontinued more than two years ago, and any rights to conduct a nonconforming use at the site, as well as the option to seek a special permit for a change to a pre-existing nonconforming use (as LB Railco proposes), have therefore been lost, pursuant to Secs. 16.31 and 16.32 of the Zoning By-Law. See Attachment F to the Assessment.

or the current means of transport and disposal, the Board should not give credence to LB Railco's assertion that, unless the Facility is built (and immediately), all of the wastes to be served by the Facility will instead be transported by truck to far-off states. The information contained in the Association's Motion suggests otherwise, and demonstrates that this assertion requires far more detailed economic analysis. Further, the Association's Motion raises the possibility that the exemption of the Facility from DEP regulations will undermine the policy of the state of Massachusetts to encourage recycling of construction and demolition debris and other commercial wastes.

(5) LB Railco has not quantified the air quality impacts of the truck traffic to the Facility. Truck traffic to the Facility site (as well as idling of trucks on-site, and the operation of the Facility itself) will have undetermined air quality impacts, both localized (i.e., adjacent to the site and within the Town) and regional. Projecting emissions and quantifying resulting impacts depends on the identification of traffic origins and movement, as discussed supra under Item (2). LB Railco has not indicated whether the Facility site is in a Class I or nonattainment area under the Clean Air Act and whether the Facility would be consistent with the State Implementation Plan under that Act.

(6) Noise impacts have not been quantified and assessed. LB Railco has not presented sufficient data on the noise impacts from the Facility itself, as well as from the truck traffic it will generate. "Sensitive receptors" in the project area have not been identified; the adjacent bikeway should be treated as such a receptor.

(7) The proposed "controls" on hazardous materials are inadequate. In response to the concerns expressed by DEP on the transport and handling of asbestos and other hazardous wastes within construction and demolition debris and contaminated soils,

LB Railco cites proposed Facility operating procedures and training programs that will be relied on to prevent releases.[6] While asserting on the one hand that hazardous materials will not be handled at the Facility, on the other hand LB Railco promises to dispose properly of such wastes when they are "found within the system." (Reply, at p.17.) This is hardly a sufficient analysis of reasonable control alternatives for a Facility that, in the absence of the Facility's asserted exemption from DEP siting regulations, would not be allowed to be located in such an environmentally sensitive area, in part because of the risks of human error, negligence, or misconduct.

(8) The impacts of the Facility on the Blackstone River Valley National Heritage Corridor have not been assessed. Section 1105.7(e)(8)(ii) directs that impacts on national and state parks be identified. Like national parks, the Corridor is an entity under the jurisdiction of DOI, and as the Commission has informed the Board, the statute establishing the Corridor, P.L. No. 99-647, requires Federal agencies to consult with DOI on actions affecting the Corridor. Id., §9. Obviously the Board cannot fulfill the requirements of either NEPA or the Corridor statute without assessing the Facility's impacts on the Corridor. In spite of the obvious significant issue posed by the presence of the Facility within the Corridor, LB Railco did not even refer to the existence of the Corridor in the Notice of Exemption, while in its Reply, it stated that "there are no historic factors on or related to the site," and asserted that the Facility was "on private property, and therefore not within the jurisdiction of the Commission." The Board should insist on obtaining the information it needs to meet its responsibilities,

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[6] LB Railco disputes that the Facility will handle hazardous materials covered by the Hazardous Materials Transportation Act (Reply p.17). The Board should require LB Railco to clarify whether it claims an exemption from state controls on the handling and disposal of hazardous materials on the basis of the cited Federal statute.

notwithstanding LB Railco's contention that the existence of the Corridor should be of no consequence to the Facility.

(9) The Facility's inconsistency with DEP siting regulations for solid waste facilities poses the risk of significant water quality impacts. As described in detail in the Assessment, Massachusetts has a comprehensive regulatory system to ensure that solid waste facilities are sited in appropriate locations, with DEP having primary oversight of siting decisions. Despite LB Railco's assertions to the contrary, the Facility does not meet DEP requirements, based on the Facility's location within water supply recharge areas, its proximity to the Blackstone River, and inadequate operational controls. Therefore, as the Assessment concludes, the Facility would receive a negative site suitability report from DEP, and would in any event be denied an operating permit. Put more simply: the Facility would violate state environmental laws. As such, the Board's allowance of the Notice of Exemption would be a significant Federal action for which an EIS would be required. See 40 CFR §1508.27(b)(10).

(10) Mitigation measures have been offered without the full range of potential alternatives being explored or evaluated. By assuming as a "given" the location, scale, and manner of operation of the Facility, LB Railco has limited its consideration of mitigation measures. The Board cannot fully assess the availability and effectiveness of mitigation measures until, as a first step, LB Railco is required to consider alternatives to the location and basic elements of the Facility.

Given all these unaddressed issues, the Board should either instruct LB Railco to supply an ER, or revoke the Notice of Exemption and require LB Railco to carry out an open-ended and open-minded planning process, with the full disclosure of all potential

impacts that NEPA and the Board's own regulations envision. In the interim, LB Railco should not be allowed to proceed with constructing and operating a Facility that would be in clear violation of local and state environmental and land-use regulations.

III. LB Railco's Filings Contain Misleading and Inaccurate Information, and the Notice of Exemption Should Therefore Be Declared Void.

By establishing classes of transactions that, although subject to Board jurisdiction, may be exempted from Board review where the activities are unlikely to be of significance to national transportation objectives, the ICCTA allows the Board to operate more efficiently and reduce unnecessary regulation of rail transportation. Because notices of exemption take effect automatically without formal Board decision, it is crucial that the Board not be misled as to the validity of a claim to exemption or the significance of the proposed activity. Further, for the Board to meet its environmental assessment responsibilities for its actions under NEPA and other Federal statutes, applicants are expected to act in good faith and provide full disclosure of the information needed by the Board to determine if further assessment is required. For these reasons, and to prevent abuse of the notice-of-exemption process, a notice of exemption that contains misleading and inaccurate information is void ab initio. See 49 CFR §1150.42(c).

Here, LB Railco has provided misleading information as to the categorization of its activities, the nature of its approach to the host community and state, and the scope of the potential environmental impacts. As an alternative to requesting further information from an entity which has been grudging at best, and deceptive at worst, in dealing with governmental authorities at all levels, the Board should declare the Notice of Exemption to be void.

As discussed supra, LB Railco's claim to be a "rail carrier" with respect to the Facility is dubious and unsupported. LB Railco based the Notice of Exemption on 49 U.S.C §10902, which is entitled "Short Line Purchases by Class II and Class III rail carriers," and which covers such carriers seeking to "acquire or operate an extended or additional rail line[.]" In the Notice of Exemption, LB Railco referred to a "line to be acquired" and its plans to "lease certain track and lands" from P&W, for the "operation of a certain track and terminal." LB Railco also stated that it "will provide common carriage service utilizing the tracks and facilities leased and will operate the subject line and service utilizing the services of [P&W] and other carriers." As a result of the Board's stay and in response to the objections raised by the Commission, DEP, and the Town, LB Railco has been forced to disclose further information (though hardly enough to reveal the full details of its use of existing rail lines). Now it is clear that LB Railco is not "acquiring" or "operating" a "rail line," but merely leasing a 750-foot section of track siding as a location to load solid wastes into rail cars. Those cars will then be hauled to disposal sites in other states by trains, and over railroad lines, owned and operated by P&W and/or other true railroads. In its Reply, LB Railco describes itself as a "small retail railroad." "Small" may be a true enough description of a 750-foot track siding—but LB's claim to be a "retail railroad" is without substance.

LB Railco was also less than forthright in the Notice of Exemption in seeking to minimize the significance of potential environmental issues and in asserting the Facility's conformance to local and state regulations. In its Reply, LB Railco continues to dispute its obligation to provide the information needed for the Board to assess the validity of LB Railco's contentions that the Facility operation will avoid or minimize adverse impacts.

LB Railco also continues to assert that it has consulted with the Town and is engaged in negotiations with DEP. In fact, LB Railco has always presented its project to the Town as a fait accompli, which might be marginally ameliorated but was not subject to any fundamental rethinking or public debate, and was certainly not subject to Town (or state) regulation or approval.[7] LB Railco's obfuscation of its violation of local and state laws is summed up by its statement in the Notice of Exemption that the Facility "complies with applicable state and local regulatory schemes other than licensing and/or permitting." The Notice of Exemption was even less candid in its treatment of the Corridor and the Corridor Commission: the Notice of Exemption ignored their existence and the Board's consequent obligations, under Federal statutes, to consult with DOI and the Corridor Commission.

By providing misleading and incomplete information, LB Railco has hindered the Board from fulfilling the requirements for environmental assessment that are established by Federal environmental statutes and internalized in the Board's own regulations. The appropriate remedy for such disregard of the letter and the spirit of the ICCTA and the Board's regulations is to void the Notice of Exemption.

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[7] In its letter to the Millbury Town Planner dated November 20, 2002, attached to the Reply as Exhibit C, LB Railco states: "We will identify the remedial options and indicate which option LB Railco intends to pursue. Some of the remedial options we have identified have to be pursued by LB Railco, because other options may require Town approval under its By-Laws." In other words, LB Railco was unwilling to consider options that would require meaningful Town review and approval, apparently from concern that a willingness to do so might undercut its claim of preemption.

CONCLUSION

For the reasons stated, the Town of Millbury respectfully requests that the Board revoke LB Railco's Notice of Exemption or declare it void. In the alternative, the Town requests that the Board continue to stay the effectiveness of the Notice of Exemption while the Board prepares a thorough and objective assessment of all potential environmental impacts associated with the proposed Facility, in accordance with the Board's regulations and the requirements of Federal environmental statutes.

THE TOWN OF MILLBURY,
by its attorneys,

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177883/MILL/0045

CERTIFICATE OF SERVICE

I hereby certify that I have on this 24th day of December, 2002 served copies of the foregoing upon the following parties of record in this proceeding by overnight mail in accordance with the rules of practice of the Surface Transportation Board:

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Dated: December 24, 2002

John J. Goldrosen

177883/MILL//0045

CDM

Environmental Review Report of Proposed LBRailco Transfer Station

December 23, 2002

Prepared for: Town of Millbury, Massachusetts
127 Elm Street
Millbury, MA 01527

Prepared by: Camp Dresser & McKee Inc.
1 Cambridge Place
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CDM
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Cambridge, Massachusetts 02139
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December 23, 2002

Mr. John Giorgio
Kopelman and Paige, P.C.
31 St. James Avenue
Boston, Massachusetts 02116

Subject: Environmental Impact Review Report for LBRailco Transfer Station
Millbury, Massachusetts

Dear Mr. Giorgio:

Attached please find the independent report prepared by Camp Dresser & McKee Inc. (CDM) reviewing the environmental proposed LBRailco transfer station in Millbury, Massachusetts. The report was prepared by CDM on behalf of the Town of Millbury.

Please do not hesitate to contact me at (617) 452-6541 if you have any questions or require anything further.

Sincerely yours,

Bruce W. Haskell

Bruce W. Haskell, P.E.
Camp Dresser & McKee Inc.

GI0893

Environmental Review of Proposed LBRailco Solid Waste Transfer Station and Transload Rail Facility, Millbury, Massachusetts

Introduction

Camp Dresser & McKee, Inc. (CDM) has been retained by the Town of Millbury (Town) to conduct an independent environmental review of a proposed Truck-to-Rail Transload Facility to be located at the intersection of Route 146 and McCracken Road in Millbury. The proponent of the facility is LBRailco, Inc., a Class III rail carrier who wishes to construct a facility to transfer construction and demolition (C&D) debris, contaminated soils and municipal solid waste from truck to rail cars that will be transported out-of-state for final disposal.

CDM has reviewed the "Informational Submittal for a Truck-to-Rail Transload Facility" sent to the Massachusetts Department of Environmental Protection (DEP) by St. Germain & Associates, Inc. of Scarborough, Maine on September 16, 2002 and the "Notice of Exemption Pursuant to 49 C.F.R. § 1105.42" sent to the Surface Transportation Board (Board) by John F. McHugh of New York, New York on November 15, 2002. CDM has also reviewed other submittals related to the proposed facility from the project proponent and others. These materials are referenced as part of the report and excerpts are provided as attachments. The following are our findings.

Summary and Conclusions

Based on our independent review of the available information, CDM believes that, at a minimum, an Environmental Impact Statement (EIS) for this project is required under the provisions of 49 CFR 1105 - Surface Transportation Board, Department of Transportation - Procedures for Implementation of Environmental Laws. Contrary to statements made by the project proponent, there are numerous significant environmental impacts from the transfer station that have not been adequately investigated or addressed. Several of these potential impacts are misstated in the filings made previously to the Surface Transportation Board.

Furthermore, the proposed site use is not in conformance with local and regional planning documents. There are also numerous sensitive environmental receptors, notably two public water supply wells and the Blackstone River, that the facility will potentially impact and which the proposed controls are inadequate. Finally, the establishment of the Blackstone River Valley National Heritage Corridor recognizes several significant historic resources in the vicinity of the River including the proposed site. The project has not met the requirements of the legislation establishing the Corridor and the Commission that oversees it.

CDM has reviewed the proposed facility as if it were subject to state and local regulations intended to protect the environment. CDM has also compared the proposed site and operations to the guidance provided by the United States Environmental Protection Agency (EPA) for transfer stations. Based on this review, CDM has identified numerous areas where the facility does not meet the regulations and could significantly impact a variety of sensitive receptors including open space, recreational resources, and wetlands including the Blackstone River and a public water supply well. CDM is providing a discussion of the potential impacts that the proposed facility will have on each of these receptors.

Type of Facility

In a document dated December 10, 2002 and filed with the Surface Transportation Board [1] the project proponent states that "The facility at issue is not a transfer station. No Material will be held on the site longer than the time it takes to pick dumped material out of the transload container and place it into rail cars" (page 12). Based on CDM's experience in solid waste facilities, this facility is a transfer station under both state and federal definitions.

An EPA guidance document[2] on transfer stations define these facilities in this manner:

> "In its simplest form, a transfer station is a facility with a designated receiving area where waste collection vehicles discharge their loads. The waste is often compacted, then loaded into larger vehicles (usually transfer trailers but intermodal containers, railcars, and barges are also used) for long-haul shipment to a final disposal site...."

The Massachusetts DEP defines a transfer station in Section 16.02 of their Site Assignment Regulations[3] for Solid Waste Facilities as follows:

> "Transfer Station means a handling facility where solid waste is brought, stored and transferred from one vehicle or container to another vehicle or container for transport off-site to a solid waste treatment, processing or disposal facility."

Both the EPA and DEP consider construction and demolition waste in their definitions for transfer stations.

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[1] Finance Docket No. 34281. LBRailCo, Inc. – Lease and Operation Exemption – Providence and Worcester Railway Company. LBRailCo's Reply to Motion To Stay of Notice of Exemption Filed by the Town of Millbury and to Motion by the Massachusetts Department of Environmental Protection to Reject the Notice of Exemption Pursuant to 49 C.F.R. ss 1150.42.

[2] "Waste Transfer Stations: A Manual for Decision-Making - Draft" United States Environmental Protection Agency, Solid Waste and Emergency Response. April 2001.

[3] Massachusetts Department of Environmental Protection. Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.000). Revisions Promulgated on May 11, 2001.

Both the EPA and DEP consider construction and demolition waste in their definitions for transfer stations.

It should be noted that the contrary to filings made by LBRailco, the definition of a transfer station does not consider whether solid waste is only being stored for a short period of time. Typical transfer station operations require the expeditious removal of waste from the site. Accordingly, the proposed LBRailco facility is a transfer station. Therefore, the typical environmental impacts for a solid waste transfer station should be evaluated for the proposed facility both as to the appropriateness of the site for the proposed use, and whether the proposed operations procedures pose unacceptable environmental impacts.

Location of a Transfer Station on the Proposed Site Has Significant Potential Environmental Impacts

The Massachusetts Department of Environmental Protection (DEP) promulgated the Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00), a copy of which is included as Attachment A to this letter, to establish a public process where proposed transfer stations such as the facility proposed by LBRailco are evaluated based on a variety of siting criteria. These criteria have been developed based on discussions between the DEP, environmental groups and the waste industry as reasonable setbacks and limitations to mitigate the potential adverse environmental impacts from specific solid waste facilities on sensitive receptors such as wetlands, water supplies and residential properties. The site assignment process includes a detailed technical review by the DEP which makes an initial assessment of the suitability of the site for the proposed solid waste operations. This initial assessment is followed by a formal public hearing process with the local Board of Health. In this process, the project proponent is required to demonstrate compliance with the site assignment regulations as well as proposed mitigation measures for odors, dust, stormwater and truck traffic.

Since originally being promulgated in 1987, the Site Assignment regulations have undergone several revisions as the potential impacts of various types of solid waste activities on sensitive environmental receptors becomes known. For this reason, there are existing facilities that either pre-date the 1987 version of the regulations and are considered "grandfathered" under the current rules or were sited prior to the most recent version of the regulations. For example, the Millbury municipal transfer station is reportedly within the Zone II of a public drinking water well. Under current siting rules, this facility would not be permitted by DEP but it is "grandfathered" as it was permitted under prior versions of the Regulations. Moreover, the facility is significantly smaller than that proposed by LBRailco and incorporates appropriate environmental controls including a building constructed over the waste handling areas.

Contrary to the statements made by LBRailco, CDM's review of the Informational Submittal to the Massachusetts Department of Environmental Protection (DEP) as if the facility would be subject to Site Assignment Regulations found several items in which the site would fail to meet the criteria for a waste handling facility. Based on 310 CMR 16.40(1)(a)3, "If the Department determines that the facility is located within a Restricted Area, the applicant shall receive a negative Site Suitability Report." This means that under no circumstances may the facility be constructed at the current location. It is clear from the documents independently reviewed that this site would receive a negative Site Suitability Report from the Massachusetts DEP. Furthermore, the proposed facility siting would have a significant adverse impact on the following sensitive receptors:

- Public Water and Surface Drinking Water Supply. Pursuant to section 310 CMR 16.40 (3)(d) of the Site Assignment Regulations, a site is not considered suitable to be assigned as a solid waste transfer facility if:

  "The waste handling area would be within the Interim Wellhead Protection Area (IWPA) or a Zone II of an existing public water supply well within a proposed drinking water source area, ... unless restrictions are imposed to minimize the risk of an adverse impact to the groundwater and either:

  a. the proponent can demonstrate to the satisfaction of the Department that the facility cannot be reasonably sited outside the IWPA or Zone II; or

  b. there would be a net environmental benefit to the groundwater by siting the facility within the Zone II or the IWPA where the site has been previously used for solid waste management activities."

As detailed in 310 CMR 22.00, the Massachusetts DEP's Drinking Water Regulations, "Zone II means that area of an aquifer that contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated." Therefore, the Zone II is the area of groundwater around a well that can potentially contribute to the water supply and is the result or reviewing geology maps and conducting detailed computer modelling. An IWPA is a set radius around a well that is established based on the well pumping rate when a Zone II has not been established.

The rationale behind this restriction is that even when a transfer station is constructed in accordance with the DEP's standards (e.g. all waste handling is conducted within a building), there is a potential for a release to the groundwater that could impact water quality within a water supply. It should be noted that the LBRailco facility is uncovered and lacks effective controls for drainage and run-off from the waste handling areas and, therefore, is significantly more likely to have an uncontrolled release, thus resulting in an unacceptable environmental risk. The filings by LBRailco discuss sloping the bins for construction and demolition waste and contaminated soils to retain a 100-year, 24-hour design storm. This approach will not prevent releases of

stormwater that becomes contaminated by contacting the waste materials because the piles within the bins will block water from being stored as well as creating slopes that will direct run-off outside of the bins.

As highlighted on the figure included in Attachment B, approximately 50 percent of the proposed site, including the proposed waste handling areas, is located within a Zone II of the existing Jacques Wells #1 & #2 (aka No. Main Street Public Drinking Water Supply Wells). These wells also supply approximately one half of the drinking water needs of the residents of the Town of Millbury which has a population of 12,800. In addition, according to a report issued by Prism Environmental, Inc. on April 10, 2002 (see Attachment C), the owner of the wells, Aquarion Water Company, is planning on increasing the pumping rates at Jacques Wells #1 & #2 in order to meet the growing water supply needs of the Town of Millbury. Currently, Well #1 is operating at an average flow rate of 494 gallons per minute (gpm); Well #2 is operating at an average flow rate of 263 gpm. The Zone II delineation of the Jacques Wells is based on a combined pumping rate for Wells 1 & 2 of 902 gpm. The current theoretical yields for Wells 1 & 2 are 779 gpm and 1,665 gpm, respectively (a combined rate of approximately 2,400 gpm). Any proposed increase to the withdrawal rates will, most likely, require a re-delineation of the Zone II for the Jacques Wells. The re-delineated Zone II will expand to encompass more of the proposed site.

Zone II recharge areas are protected to ensure that the groundwater and surface water that contribute to public water supply wells are not contaminated. In the case of the proposed Transload Facility site, the area around the Blackstone River is a Zone II area providing recharge to two public water supply wells located downgradient of the site. The proposed project has both construction and demolition waste and contaminated soils left uncovered to rain and with minimal and ineffectual controls that would prevent a release to either the groundwater or the Blackstone River. Federal and state regulations regarding control of stormwater run-off from industrial facilities such as transfer stations require the inclusion of engineered structures such as oil-water separators, catch basins with sumps, stormwater retention basins including forebays and controlled outfalls to control stormwater quality and quantity discharging into wetland resource areas. The proposed LBRailco facility only proposes a line of haybales and a vegetated slope as the stormwater controls from the truck maneuvering and waste handling areas. The proposed system will not control a release into the River either of leachate, truck or train related fluids or the sediments from these types of operations.

- Protection of Open Space. The proposed site is located within the Blackstone River Valley National Heritage Corridor. The Corridor is a region of nearly 400,000 acres located in central Massachusetts and northern Rhode Island. The Corridor was designated by an Act of Congress in 1986 to preserve for present and future generations the unique and significant value of the Blackstone River Valley. The National Park Service, two state governments, dozens of local municipalities,

businesses, nonprofit historical and environmental organizations, educational institutions, many private citizens, and a unifying commission all work together in partnerships to protect the Valley's special identity and prepare for its future.

The facility as proposed would have an adverse impact on the Corridor. It is CDM's experience that the proposal to have uncovered piles of construction and demolition debris and contaminated soils will create dust problems during dry weather that will be a nuisance condition both on the River, the surrounding roadways and the bike path constructed immediately to the north of the proposed site. The proposed controls - watering of the piles from an on-site water storage truck, would be ineffective given the quantities of materials that will be moved through the facility. Therefore, CDM believes that the project as proposed will not meet the requirements of the Site Assignment Regulations to protect open space resources. This issue could be a reason for either the DEP or the local Board of Health to reject the application.

- Operations within Floodplain. CDM reviewed maps prepared by the Federal Emergency Management Agency (FEMA) for the Blackstone River in the vicinity of the LBRailco facility. This review indicated that a significant portion of the waste handling areas is within the mapped 100-year floodplain of the River (see figure included in Attachment D). Obviously, it is not appropriate to handle materials such as construction and demolition waste, contaminated soils and municipal solid waste in a floodplain. EPA's draft guidance document on transfer stations recommends that this type of facility not be sited within mapped floodplains.

- Size of Facility and Appropriate Buffers. According to section 310 CMR 16.40(4)(h), the minimum distance between the waste handling area and the property boundary must be 100 feet. This distance has been established by the DEP to provide a minimum buffer from abutting properties to the waste handling areas as a mitigation to potential odor, dust, noise and other nuisance conditions created by solid waste transfer facilities.

  Figure 3 of the Informational Submittal indicates that the waste handling area of the facility is less than 100 feet from the site property boundary. Furthermore, LBRailco is not providing any cover over the construction and demolition debris and contaminated soils areas that would provide the primary controls for nuisance conditions that are assumed by DEP in establishing the 100-foot buffer. Given the lack of cover or structure, the setback to the property lines should be significantly further to control adverse nuisance conditions from this operation.

- Riverfront Protection Area. Section 310 CMR 16.40(6)(d) states that no site shall be determined to be suitable or be assigned as a solid waste handling facility where "the waste handling area would be within the Riverfront Area as defined at 310 CMR 10.00." The Riverfront Area in Millbury is a 200-foot buffer zone from the River that receives additional protection. The specific purpose of the Riverfront

Area and the Wetlands Protection Act as they relate to the proposed facility is discussed below. The majority of the 3.5-acre site is located in the Riverfront Protection Area including the entire waste handling area. The reason for this criterion is that solid waste facilities can have a significant impact on rivers and the associated riverfront areas. It is important to note that the siting rules specifically exclude the construction of solid waste facilities in the Riverfront Area, regardless of the prior use of the site. This restriction is based on the impacts from stormwater run-off, groundwater discharges, aesthetics and nuisance conditions on the River resource. Further information regarding the Riverfront Protection Act of 1996 and the potential impacts is presented below.

In summary, there are several nearby sensitive receptors including the Blackstone River and public groundwater supply wells. As a result, the proposed site would create a potential risk to human health, safety and the environment. For these reasons, the facility would not receive a site assignment under state regulations in contrast to the statements made by the project proponent.

Conformity with Local Zoning and Planning

Section 1105.7(3)(i) of the STB's Procedures for Implementation of Environmental Laws requires that the project proponent state whether the proposed action is consistent with existing land use plans and describe any inconsistencies. CDM has reviewed the Town of Millbury's Master Plan and found that the project is inconsistent with many of the land use plans for this area. This is contrary to the statements made by the project proponent in its filings with the STB. The Town of Millbury Master Plan was issued in 1998 with the goal of defining and discussing a set of goals for the continued development and preservation of the town's resources.[4] The Master Plan contains nine major goals that reflect the views of the citizens of Millbury including:

- Preserving rural character;
- Preserving and strengthening existing village character
- Improving roadways, access, and transportation
- Broadening the tax base
- Improving, maintaining, and enhancing the water and sewage infrastructure
- Protecting historically significant areas and sites;
- Preserving, protecting, and expanding open spaces;
- Enhancing, improving, and maintaining recreational facilities;
- Promoting the compatibility of land uses.

A copy of portions of the Town's Master Plan is attached to this letter (Attachment E) for reference.

[4] Town of Millbury Master Plan, 1998.

Locating the Transload Facility at the proposed site is wholly inconsistent with the majority of the Master Plan goals. A comparison of the standards as articulated in the Master Plan and the proposed facility follows:

- *Preserving the Rural Character*: Millbury desires to preserve the essential character of its rural landscapes, scenic river views and its historic mill town tradition. Specifically, the Blackstone River is an important potential asset in shaping the Town's character. The Plan does acknowledge the need to promote commercial development in appropriate locations. Specifically, the Plan recommends a strategy to "create smaller mixed-use commercial village areas in designated suitable locations near the River and to create a larger business park on the west side of Route 146." This business park would not contain industrial uses of this location such as the proposed transfer station.

- *Improving, Maintaining, and Enhancing the Water and Sewage Infrastructure*: Millbury's drinking water supply relies on groundwater, which is particularly susceptible to a wide variety of human induced contamination. For this reason, the Master Plan emphasizes that "It is especially important that steps be taken to ensure that overall groundwater quality be maintained..."

- *Protecting Historically Significant Areas and Sites*: To meet this goal, the Master Plan emphasizes coordinating Town preservation efforts with those associated with the Blackstone River Valley National Heritage Corridor. The Corridor is identified as an area of particular historic significance, and priority is placed on preserving the Blackstone River and its environs for future generations.

- *Preserving, Protecting, and Expanding the Open Spaces*: The Master Plan recognizes that the completion of the Route 146/Massachusetts Turnpike interchange will impose more development pressure. As part of the environmental review and mitigation process for the construction of the new interchange, the construction incorporated significant attention to cleaning, restoring and enhancing the Blackstone River. The Master Plan views of the Blackstone River should be opened up where possible during further development and redevelopment in the River's vicinity.

- *Enhancing, Improving, and Maintaining Recreational Facilities*: The Master Plan states as a goal the development of the Blackstone River and its banks for boating, canoeing, biking and hiking. The Master Plan calls for recreational facilities such as the existing bike path that runs directly across (and above) the proposed site. The Master Plan identifies the water resources of Millbury, including the Blackstone River and the many lakes and ponds, as the Town's most important natural resource, providing residents with excellent scenery and recreational opportunities.

- *Zoning*: The site is located in an industrial zoning district (specifically, the Industrial-I District). Section 25 of the Zoning By-Law lists the uses that are permitted within the industrial districts; uses not specifically allowed are prohibited. Manufacturing, processing, or research facilities, other than asphalt plants, are permitted as of right. A "freight or transportation terminal" is allowed by special permit (if not within 800 feet of more than two dwellings). Solid waste facilities are not among the uses permitted by right or by special permit. Furthermore, the site is within the floodplain overlay district. Section 36.3 of the Zoning By-Law limits uses allowed within a floodplain district to conservation, recreation (including bicycle paths), farming, and forestry, and the maintenance of buildings "lawfully existing prior to the adoption of [the floodplain district regulations]." Section 36.3 specifically forbids the "storage or disposal of any . . . refuse, trash, rubbish, debris, or dredged spoil," as well as "the storage or disposal of hazardous wastes...."

  Thus, the proposed facility is not allowed at this site, and in fact is specifically prohibited, under the Town Zoning By-Law. Although LBRailco states in its filings that the proposed site was once a lumber transfer activity, this operation has been inactive since at least November 2000, and the start-up of a new use such as that proposed for the site would not be entitled to claim "grandfathering" protection from zoning laws. The asphalt plant that is referred to in LB Railco's filings is "grandfathered" on its location as a pre-existing nonconforming use.

The Proximity of the Site Would Have Significant Impacts on the Blackstone River

As indicated previously, the proposed site will not meet the requirements of the Rivers Protection Act (310 CMR 10.000). Although this fact in and of itself renders the proposed site unsuitable for the facility under the state Solid Waste Regulations, there are additional environmental impacts which the Rivers Protection Act is designed to protect. The Rivers Protection Act (St. 1996, c. 258) was signed into law on August 7, 1996 and added a new resource area (Riverfront Area) and accompanying performance standards to those resource areas regulated under the Wetlands Protection Act (MGL Chapter 131, Section 40). Riverfront Area is the area of land between a river's mean annual high-water line and a parallel line measured horizontally at a distance of 200 feet.

Performance Standards
Parties proposing projects within the Riverfront Area must demonstrate compliance with two performance standards:

- The proponent shall demonstrate that there are no significant adverse impacts to the Riverfront Area's ability to protect public and private water supplies, wildlife habitat, fisheries, shellfish, and groundwater, nor inhibit its ability to mitigate or prevent flooding, storm damage, and pollution.

- The proponent shall demonstrate that there are no practicable and substantially equivalent economic alternatives to the proposed work with less adverse impacts to the Riverfront Area's ability to protect the public interests described in Performance Standard (1).

In addition, the Wetlands Protection Act Regulations include provisions for work within a previously developed Riverfront Area. Relevent provisions of the Regulations are included in Attachment G. As the proposed site is a previously disturbed parcel, certain provisions of the Rivers Protection Act, designed specifically to address previously developed land would take effect. According to 310 CMR 10.58(5), previously developed riverfront area may be redeveloped provided that the proposed work improves the existing conditions at the site. The performance standards for work in previously developed riverfront area are summarized here:

- The proposed work shall result in an improvement over existing conditions of the capacity of the Riverfront Area to perform its stated functions and values.

- Stormwater management is provided according to standards established by the Department.

- Within 200-foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less.

- Proposed work, including expansion of existing structures, shall be located outside of the Riverfront Area or toward the riverfront area boundary and away from the river.

- The area of work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less that 10% of the riverfront area.

A review of the documentation provided for the facility found that it does not meet any of the performance standards for work within the Riverfront Area. The proposed facility would include uncovered areas for construction and demolition waste and contaminated soils and an intensive trucking operation within the Riverfront Area. Clearly, this is a more significant impact than the current abandoned condition of the site or the prior use for transferring lumber. As discussed below, the proposed stormwater management system does not include standard controls such as catch basins, oil/water separators and basins for minimizing discharges of pollutants into the River. Significant portions of the work, including the waste handling areas area within the 100-foot zone.

Purpose of Riverfront Area Designation
The Riverfront Area wetland resource area was established by the Rivers Protection Act and incorporated into the Wetlands Protection Act regulations because these resource areas offer significant ecological functions that are critical to the preservation

of both natural and public resources. The presence and preservation of vegetation within the Riverfront Area is integral to its ability to functions as a resource area.

Where rivers serve as water supplies or provide induced recharge to wells, Riverfront Area can be important to maintaining drinking water quality and supply. Land along rivers in its natural state, with a high infiltration capacity increases the yield of a water supply well. In addition, Riverfront Area provides filtration of runoff to rivers that can act to remove contaminants that may otherwise reach human populations served by wells near rivers or by direct water intakes.

A stream or river ecosystem can be influenced greatly by the interaction between surface water and groundwater. The dynamic relationship between surface water and groundwater extends beyond the horizontal limits of the river's channel and sustains communities of aquatic organisms which regulate the flux of nutrients, biomass and the productivity of organisms, including fish, within the river itself.

Riverfront Area provides significant flood and storm damage control by providing recharge and by slowing surface water runoff in a variety of ways. For example, the root systems of vegetation keeps the soil porous and thereby increases its capacity for infiltration, while vegetated waterfronts can also dissipate the energy of storm flows, and thereby reduce property damage.

Riverfront Area also is critical to the preservation of both wildlife and fisheries habitats. The vegetation along rivers provides food, shelter, breeding, migratory, and overwintering habitats. As mentioned above, vegetated Riverfront Areas provide critical filtration capabilities and act to prevent over-sedimentation of rivers and streams. Increased sedimentation can eliminate fish populations along a reach of a river by clogging gills and reducing visibility, thereby inhibiting the ability to find and hunt food.

Review of Informational Submittal
Based on plans of the proposed facility (Figure 3, Site Layout, prepared by St. Germain & Associates, Inc.) the majority of the facility is located within Riverfront Area associated with the Blackstone River. As depicted on the plan, the edge of pavement extends to eighty feet from the western bank of the river, and the limit of the gravel-covered area is fifty feet from the edge of the river. A 50-foot wide vegetative buffer is indicated on the plan between the western bank of the Blackstone River and the limit of the graveled areas.

The Rivers Protection Act establishes performance standards (described above) with which compliance must be demonstrated prior to the commencement of work, to be in compliance with the interests of the Act. Contrary to statements made by the project proponent, CDM's review of the submitted information found that the proposed facility does not meet the standards for construction in the Riverfront Area, even for a previously disturbed area. Specifically, the following problems have been identified:

- The introduction of contaminated soils and construction and demolition waste without appropriate environmental controls is significantly worse than existing conditions as far as impacts to the Blackstone River.

- The proposed stormwater management system of haybales and a vegetated strip does not meet DEP or EPA standards or good engineering practice. The proposed alternate to construct basins and controls along the riverbank is not viable and will be useless during even minor flood events.

- All the proposed work including waste handling is within the Riverfront Area.

Finally, CDM repeats the prior conclusion that these types of facilities are specifically excluded from Riverfront Areas in the Site Assignment regulations without any consideration that the area was previously disturbed. This exclusion is based on the direct impacts that operations of these facilities have on these sensitive resource areas. At a minimum, further evaluation of the impacts of the proposed facility on the Blackstone River needs to be completed.

The Facility Would Not Receive an Operating Permit from DEP Because the Proposed Operations Are Not Protective of Human Health and the Environment

As stated above, in CDM's experience DEP would decide that the proposed site is unsuitable for the facility. Furthermore, based on CDM's experience permitting numerous solid waste facilities in Massachusetts, the proposed facility would not obtain an operating permit from DEP. This determination is made because the site does not meet restrictions designed to be protective of human health, safety and the environment (discussed above) and the proposed operations have inadequate controls to mitigate nuisance conditions including dust and contaminated stormwater. The following is a discussion of the specific deficiency areas.

Covered Facilities

The Site Assignment Regulations are based on the presumption that the proposed facility will be designed and constructed to meet all relevant state and federal statutory, regulatory and policy requirements. Based on the information reviewed, the proposed facility will not have an enclosed waste handling area. Rather, the proposed facility will be open to the weather. No methods of handling stormwater or other liquids (i.e. dust controls) are indicated in the submittal.

The covering of handling facilities is an important aspect of any waste handling facility. When rainwater and other liquids percolate through waste, metals and other contaminants dissolve and create what is typically known as leachate. Metals and contaminants will be mobilized into the leachate and will flow directly into the Blackstone River. Based on the information submitted, LBRailco is admitting that the proposed facility will pollute the Blackstone River. Under no circumstances should leachate be allowed to "runoff" to, or be directly discharged to the Blackstone River.

The only reference to any conveyance, storage, or treatment of leachate produced by the operation relates to sloping the storage bins. As discussed above, this is an inadequate approach given that the materials stockpiled in the bins will use much of the available stormwater storage and the slope of the piles will direct stormwater away from the bins.

Stormwater Runoff
The issue of site runoff is raised in the Informational Submittal under section 3.4 Environmental Controls. However, the submittal does not mention proposed permanent stormwater control devices (i.e. stormwater detention basins, oil/water separators, etc.). The project proponent proposes to slope the storage containers to allow for storage of a 6-inch, 24-hour storm. This proposal is inadequate for the proposed operation. The proposed haybales and vegetated strip will not remove an adequate amount of sediment from the paved areas or provide fro treatment of any dissolved contaminants or oils. The continuous dumping in the containers will dam and block much of this storage capacity while the height of the piles will cause stormwater to run out of the small bins. Also, CDM's experience with contaminated soils is that they often have free water when they arrive at a site that can significantly add to the water that would require storage. LBRailco, Inc. proposes that, "Controls will also be implemented to reduce the potential for spillage or pollution into the adjacent Blackstone River." However, details of the methods to control sedimentation and pollution of the river are missing. Installing a row of temporary haybales and silt fence and loaming and seeding the slopes within 50-feet of the Blackstone River is not sufficient to protect the river from sedimentation and pollution.

Inadequate Operations Plan
A well operated transfer station needs to have adequate areas for handling the permitted tonnages and operation. The plans proposed by LBRailco show the entire site (except for the 50-foot buffer along the River) being used for storage, handling and truck maneuvering related to contaminated soils and construction and demolition debris. However, the application makes several references to the transloading of municipal solid waste as part of the operations. It is not stated where this operation will occur and how it would interact and not interfere with the other proposed operations. Based on the complete utilization of the site by the soils and C&D waste, it appears that the MSW containers will create operation issues with truck traffic flow on-site.

The Proposed Facility Does Not Comply with Federal EPA Guidance on Transfer Stations

Although the United States Environmental Protection Agency (EPA) does not have specific regulations governing transfer stations, EPA has issued a draft report entitled, "Waste Transfer Stations: A Manual for Decision-Making" with the intent of promoting the use of best practices for the siting, design, construction, and operation of transfer stations to maximize effectiveness and efficiency, while minimizing their

impact on the community. Environmental issues including traffic, noise, odors, air emissions, storm water quality, vectors, and litter are discussed in the manual. The proposed facility does not follow any of the EPA recommendations for environmental issues and completely ignores recommendations for stormwater quality. A copy of this document is included in Attachment H to this letter.

EPA recommendations and considerations for transfer stations specifically mention:

- *Covering of waste handling and storage areas.* As described the proposed Transload Facility is open to the weather and does not describe efforts to be initiated to limit the amount or control of leachate production.

- Providing appropriate pretreatment of stormwater and leachate. According to the document, pretreatment requirements vary depending on the capabilities of the receiving water/sewer, but could include provisions for allowing solids to settle out (detention/retention basin), oil/water separators, and other treatment systems prior to discharge to the Blackstone River or sewer. Note that tractor-trailer trucks will be queued over the distance of the site and typically leak oil and other fluids while idling. These fluids will be carried to the Blackstone River if not removed in an oil/water separator or similar type of controls typical for this type of operation.

- *Complying with all surface water management regulations applicable in the jurisdiction where the station is located.* It is clear from the proposal, the LBRailco is not in compliance with stormwater management regulations since stormwater will discharge directly to the Blackstone River. The controls proposed by LBRailco such as sloping bins will be ineffective in controlling leachate discharges into the River.

- *Locating stations outside of local flood zones.* As previously indicated, the waste handling area of the proposed Transload Facility is within the 100-year flood plain of the Blackstone River (see Attachment D).

- *Minimizing impervious areas and maximizing landscape and vegetative cover areas to reduce total runoff.* Other than vegetating a 50-foot swatch of land between the bank of the Blackstone River and the proposed pavement, it appears the majority of the site is paved. The proposed facility makes no effort whatsoever to limit paved areas, in fact, LBRailco stresses in its proposal that pavement is an improvement to the current condition.

The LBRailco submittal to the Board contains no plans or discussion of stormwater management controls or treatment systems other than to say that, "paved surfaces will be sloped in a manner that will allow surface water to sheet flow off site." This statement clearly indicates that LBRailco has no intention to treat any stormwater runoff and will discharge untreated runoff to the Blackstone River.

In addition, the EPA Manual includes a discussion of operation and maintenance of stormwater runoff treatment systems located on transfer station facilities as follows:

- Maintaining all surface water management facilities in good operating condition. This includes periodic cleaning and removal of silt and debris from drainage structures and ponds, as well as removing collected oil from oil/water separators.
- Responding promptly to exterior spills to prevent waste materials from entering the surface water system.
- Cleaning up liquid spills such as oils, paints, and pesticides with absorbent material rather than hosing them into drains.
- Using secondary containment around temporary storage area for waste materials.

As detailed previously, LBRailco's proposals regarding stormwater management are inadequate and will not protect the wetland resource areas in close proximity to the site.

Conclusions

The proposed site and facility is, without question, an unacceptable location for a transfer station. Three specific reasons would preclude this site being used for a transfer station operation in Massachusetts:

1. The majority of the proposed site is located within a Zone II groundwater protection zone (310 CMR 16.00) of a public water supply well. The Jacques Wells are being considered for an upgrade to increase the groundwater withdrawal rate, which is likely to lead to an increase in the existing Zone II delineation area.
2. The majority of the proposed site is located within the Riverfront Protection Area (310 CMR 10.00) and the proposed stormwater controls are inadequate.
3. The majority of the site, including the waste handling area, is within the 100-year flood plain of the Blackstone River.

ATTACHMENT A
Massachusetts DEP Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.000)

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310 CMR 16.00: SITE ASSIGNMENT REGULATIONS FOR SOLID WASTE FACILITIES

This version of 310 CMR 16.00 was modified June 2001 to reflect current changes effective 6/8/01

This copy of the Site Assigment Regulations for Solid Waste Facilities, 310 CMR 16.00 is not an "Official Version" of the regulations. In particular, it lacks page numbers and the effective dates at the bottom of each page. Other unexpected differences may also be present. This HTML version is offered as a convenience to our users and DEP believes that the body of the text is a faithful copy of the regulations. If you REALLY, ABSOLUTELY, MUST know that the version you have is correct and up-to-date, then you must purchase the document through the State Bookstore (at http://www.mass.gov/sec/spr/spridx.htm). The official versions of all state statutes and regulations are only available through the State Bookstore.

Section

PART IV: SITE SUITABILITY CRITERIA

16.01: Purpose and Authority

(1) Purpose. 310 CMR 16.00 is composed of four Parts pertaining to the process for deciding whether a parcel of land is suitable to serve as the site for a solid waste management facility. The first Part describes the procedures for submitting an application to the Department and the board of health for site assignment and sets forth the review process used by the Department in determining whether a site is suitable. Part I is intended to provide for the complete submission of information necessary for determining site suitability and for extensive opportunity for public comment within a relatively short review period. The second Part sets forth rules governing the Public Hearings to be held by the board of health for the purpose of assigning a site. The third Part sets forth the process by which the board of health assesses the Application Fee and the allowed expenditures of those funds for reviewing the application and conducting the public hearings. The final Part establishes the site suitability criteria that are to be applied by the Department and the board of health in determining whether a site is suitable. Part IV is intended to make the siting of facilities subject to consistent standards and provide for the protection of public health and safety and the environment. Protection of public health, safety and the environment is primarily the prevention of pollution from the site, but also encompasses the function of the site within an integrated solid waste management system which maximizes material reuse and conservation of natural resources.

(2) Authority. 310 CMR 16.00 is promulgated by the Department of Environmental Protection pursuant to M.G.L. c. 21A, §§ 2 and 8 and c. 111, §§ 150A and 150A½.

16.02: Definitions

The following words when used herein, except as otherwise required by the context, shall have the following meaning:

Abutter means the owner of land sharing a common boundary or corner with the site of the proposed activity in any direction, including, but not limited to, land located directly across a street, way, creek, river, stream, brook or canal.

Adjacent Area means a parcel of land contiguous to a site or in close enough proximity to be directly impacted by water, air or soil borne pollutants, not exceeding a ½ mile radius from the site.

Adverse Impact means an injurious impact which is significant in relation to the public health, safety, or environmental interest being protected.

Agricultural Waste means discarded organic materials produced from the raising of plants and animals as part of agronomic, horticultural or silvicultural operations, including, but not limited to, animal manure, bedding materials, plant stalks, leaves, other vegetative matter and discarded by-products from the on-farm processing of fruits and vegetables.

Applicant means the person named in the application as the owner of a property interest in the site or the operator of the proposed facility where the owner has entered into an agreement with an operator at the time the application is filed.

Area of Critical Environmental Concern (ACEC) means an area designated by the Secretary of the Executive Office of Environmental Affairs pursuant to 301 CMR 12.00: *Areas of Critical Environmental Concern.*

Asphalt Pavement, Brick, and Concrete Rubble means rubble that contains only weathered (cured) asphalt pavement, clay bricks and attached mortar normally used in construction, or concrete that may contain rebar. The rubble shall be clean and not painted, coated or impregnated with any substance. The rubble shall not be mixed with or contaminated by any other wastes or debris.

Backyard Composting means the composting of organic solid waste, such as grass clippings, leaves or brush generated by a homeowner or tenant of a single or multi-family residential unit or an apartment complex unit, where composting occurs at that dwelling place.

Cathode Ray Tube, CRT or Intact CRT means an intact glass tube used to provide the visual display in televisions, computer monitors, oscilloscopes and similar scientific equipment, but does not include the other components of an electronic product containing a CRT even if the product and the CRT are disassembled.

Combustion Facility means a facility employing an enclosed system using controlled flame combustion, the primary purpose of which is to thermally break down solid wastes, producing ash that contains little or no combustible materials.

Commissioner means the Commissioner of the Department of Environmental Protection or his or her designee.

Compostable Material means an organic material, excluding waste water treatment residuals, that has the potential to be composted, which is pre-sorted and not contaminated by significant amounts of toxic substances.

Composting means a process of accelerated biodegradation and stabilization of organic material under controlled conditions yielding a product which can safely be used.

Construction and Demolition Waste means the waste building materials and rubble resulting from the construction, remodeling, repair or demolition of buildings, pavements, roads or other structures. Construction and demolition waste includes but is not limited to, concrete, bricks, lumber, masonry, road paving materials, rebar and plaster.

CRT Operation means an area or works other than a household that is used for the collection, storage, transfer, containment, or handling of Non-commodity CRTs. The CRT Operation is the place where the determination of whether a CRT is a Non-commodity CRT is made.[1]

Department means the Department of Environmental Protection.

Department Report on Suitability means the report issued by the Department pursuant to M.G.L. c. 111, § 150A, stating whether a site proposed for a solid waste management facility in an application for a site assignment is suitable.

Disposal means the final dumping, landfilling or placement of solid waste into or on any land or water or the incineration of solid waste.

Disposal Facility means any solid waste combustion facility rated by the Department at more than one ton per hour or any landfill.

Downgradient means:
(a) in reference to surface water, the direction perpendicular to lines of equal elevation over a distance in which elevation continuously decreases, measured from the point or area in question; or
(b) in reference to groundwater, the direction perpendicular to lines of equipotential over a distance in which total head continuously decreases, measured from the point or area in question.

Existing Public Water Supply see Public Water Supply.

Expand a Site means to move a solid waste facility's operation to a previously unassigned site that is contiguous to the original site or to modify a solid waste facility's operations causing it to exceed any capacity or total volume limit stated in its current site assignment.

Facility means an established site or works, and other appurtenances thereto, which is, has been or will be used for the handling, storage, transfer, processing, treatment or disposal of solid waste including all land, structures and improvements which are directly related to solid waste activities.

Food Material means source separated material produced from human food preparation and consumption activities at homes, restaurants, cafeterias, or dining halls which consists of fruits, vegetables and grains, fish and animal products and byproducts, and soiled paper unsuitable for recycling.

Handling Area means an area used for the transfer, storage, processing or treatment of solid waste, excluding weigh stations or access roads.

Handling Facility means any facility that is not a disposal facility, for example transfer stations, storage facilities and other facilities used primarily for the storage, processing or treatment of solid waste. ("Handling facility" includes recycling facilities and composting facilities that are required to obtain a site assignment pursuant to 310 CMR 16.05)

Infectious waste means "Infectious Waste or Physically Dangerous Medical or Biological Waste" as defined in 105 CMR 480.000, Department of Public Health, State Sanitary Code and includes: blood and blood products; pathological waste; cultures and stocks of infectious agents and associated biologicals; contaminated animal carcasses, body parts and bedding; sharps; and biotechnological by-product effluents.

Interim Wellhead Protection Area (IWPA) means that wellhead area established under 310 CMR 22.02, *Drinking Water*.

Land Actively Devoted to Agricultural or Horticultural Uses means that land as defined at M.G.L. c. 61A, § 3.

Landfill means a facility or part of a facility established in accordance with a valid site assignment for the disposal of solid waste into or on land.

New Site means a parcel of land for which an applicant seeks site assignment as a solid waste facility which has not been previously assigned and is not contiguous to an existing site assigned area.

Non-commodity CRT means a CRT that has been determined will not be returned to service as an operable CRT, and has not been disposed.[2] CRTs that are disposed of intact, and CRTs

that are crushed or ground up (excluding monochrome CRTs) are subject to 310 CMR 30.000.

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[1] The implication is that an operation only handling commodity CRTs is not a CRT Operation. Thus, a charity that accepts CRTs for resale is not regulated if it doesn't make the determination that a CRT is not a commodity CRT, but rather leaves that determination to its transferees.

[2] The implication is that all CRTs are recyclable once they are determined not to be commodities as operable CRTs, but it takes an affirmative determination for a CRT to convert from a commodity. Note: The hazardous waste regulations do not apply to households.

Non-Potential Drinking Water Source Area means that area defined by 310 CMR 40.0006: *Massachusetts Contingency Plan.*

Operator means any person who has care, charge or control of a facility subject to 310 CMR 16.00, including without limitation, an agent, lessee of the owner or an independent contractor.

Perennial Water Course means a stream or river that flows year round.

Person(s) means any individual, partnership, association, firm, company, corporation, department, agency, group, public body (including a city, town, district, county, authority, state, federal, or other governmental unit) or any other entity responsible in any way for an activity subject to 310 CMR 16.00, but not including an agency of the Commonwealth.

Pollution shall have the same meaning means pollution as in 310 CMR 19.006: *Solid Waste Management.*

Post-Consumer Recyclables means the following materials which have served their intended end use and have been pre-sorted:

(a) containers, films and wraps and other forms of packaging made from metal, glass, plastic or paper; and
(b) newspaper, office paper, cardboard and other grades of paper.

Potential Private Water Supply means a Class I aquifier as defined at 314 CMR 6.03: *Ground Water Quality Standards*, as may be amended, capable of yielding water of sufficient quality and quantity which is located under a parcel of land that at the time of the earlier of the following two filings, the Site Assignment Application or, where applicable, the Massachusetts Environmental Policy Act Environmental Notification Form, is:

(a) zoned residential or commercial;
(b) not served by a public water supply; and
(c) subject to a subdivision plan or a building permit application approved by the appropriate municipal authority.

Potential Public Water Supply means a drinking water source which, at the time of the earlier of the following two filings, the Site Assignment Application, or where applicable, the Massachusetts Environmental Policy Act Environmental Notification Form, has been determined to be capable of yielding water of sufficient quality and quantity for future development as a public water supply, and either:

(a) has been designated and received Departmental approval under the "Guidelines and Policies for Public Water Systems", as amended; or
(b) has had the necessary documentation submitted on its behalf for determination as a Potential Public Water Supply as defined by the Department's Division of Water

Supply.

Potentially Productive Aquifer means:
(a) all aquifers delineated by the U.S. Geological Survey (USGS) as a high or medium yield aquifer; and
(b) all aquifers located east of the Cape Cod Canal (Cape Cod), on the Elizabeth Islands, on Martha's Vineyard, or on Nantucket.

Pre-Sort means to segregate a material for reuse, recycling or composting by preventing the material from being commingled with solid waste at the point of generation or to separate and recover the material from solid waste at a processing facility. Pre-sorting does not require the recovery or separation of non-recyclable components that are integral to a recyclable product (*e.g.* insulation or electronic components in white goods).

Private Water Supply means a well used as a source of drinking water supplying a non-public water system with any volume of groundwater from any source.

Processing means the use of any method, technique or process to reduce the volume or alter the physical characteristics of solid waste or recyclable or compostable materials through any means, including, without limitation, separating, baling, shredding, crushing or reworking.

Proposed Drinking Water Source Area means the preliminary Zone II or the preliminary IWPA for a proposed water supply well that has received a site exam approval by the Department and is actively pursuing source approval under the Drinking Water Regulations at 310 CMR 22.21(1), *Source Approval.*

Public Water Supply means a source of drinking water supplying a public water system as defined in 310 CMR 22.00, as may be amended.

Recyclable or Recyclable Material means a material that has the potential to be recycled and which is pre-sorted and not contaminated by significant amounts of toxic substances.

Recycle means to recover materials or by-products which are:
(a) reused; or
(b) used as an ingredient or a feedstock in an industrial or manufacturing process to make a marketable product; or
(c) used in a particular function or application as an effective substitute for a commercial product or commodity.
"Recycle" does not mean to recover energy from the combustion of a material.

Recycling Drop-Off Center means a location where pre-sorted post-consumer recyclables are deposited by the generators of the recyclables for collection and transfer to a facility for processing or directly to a market.

Regional Disposal Facility means a solid waste facility that is a member of a regional disposal district established in accordance with M.G.L. c. 40, § 44K, or a solid waste facility that receives substantial quantities of solid waste on a regular basis from two or more municipalities.

Residue means all solid waste remaining after treatment or processing and includes, without limitation, ash, material which is processed for recycling or composting but is unmarketable or speculatively accumulated due to its inferior quality and other solid waste which is not recovered. Non-recyclable material which is integral to a pre-sorted recyclable product shall not constitute residue for the purpose of calculating residue generation rates.

Restricted Area means an area specified in 310 CMR 16.40(3) and (4) from which a solid waste management facility is excluded.

Review Period means the 60 day period during which the Department shall review the Site Assignment Application and issue the Department report.

Riverfront Area means that area defined by 310 CMR 10.00: *Wetlands Protection.*

Site Assignment means a determination by a board of health or by the Department as specified in M.G.L. c. 111, § 150A which:

(a) designates an area of land for one or more solid waste uses subject to conditions with respect to the extent, character and nature of the facility that may be imposed by the assigning agency after a public hearing in accordance with M.G.L. c.111, § 150A; or
(b) establishes that an area of land was utilized as a site for the disposal onto land of solid waste or as a site for a refuse disposal incinerator prior to July 25, 1955. The area of land site assigned under 310 CMR 16.02: Site Assignment shall be limited to the lateral limits of the waste deposition area ("the footprint"), or the area occupied by the incinerator, as they existed on July 25, 1955, except as otherwise approved by the Department in approved plans. Said assignment shall apply only to uninterrupted solid waste disposal activities within the footprint or plan-approved area and shall have no legal force or effect at any time after the cessation of disposal activities except as otherwise provided at 310 CMR 16.21.

Sludge means the accumulated solids and/or semisolids deposited or removed by the processing and/or treatment of gasses, water or other fluids.

Sole Source Aquifer means an aquifer so designated by the U.S. Environmental Protection Agency, or by the Department under the authority of a state program as may be established, that supplies 50% or more of the drinking water for the aquifer service area, and the volume of water which could be supplied by alternative sources is insufficient to replace the petitioned aquifer should it become contaminated.

Solid Waste or Waste means useless, unwanted or discarded solid, liquid or contained gaseous material resulting from industrial, commercial, mining, agricultural, municipal or household activities that is abandoned by being disposed or incinerated or is stored, treated or transferred pending such disposal, incineration or other treatment, but does not include:

(a) hazardous wastes as defined and regulated pursuant to 310 CMR 30.000;
(b) sludge or septage which is land applied in compliance with 310 CMR 32.00;
(c) waste-water treatment facility residuals and sludge ash from either publicly or privately owned waste-water treatment facilities that treat only sewage, which is treated and/or disposed at a site regulated pursuant to M.G.L. c. 83, §§ 6 & 7 and/or M.G.L. c. 21, §§ 26 through 53 and the regulations promulgated thereunder, unless the waste-water treatment residuals and/or sludge ash are co-disposed with solid waste;
(d) septage and sewage as defined and regulated pursuant to 314 CMR 5.00, as may be amended, and regulated pursuant to either M.G.L. c. 21, §§ 26 through 53 or 310 CMR 15.00, as may be amended, provided that 310 CMR 16.00 does apply to solid waste management facilities which co-dispose septage and sewage with solid waste;
(e) ash produced from the combustion of coal when reused as prescribed pursuant to M.G.L. c. 111, § 150A;
(f) solid or dissolved materials in irrigation return flows;
(g) source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, as amended;
(h) those materials and by-products generated from and reused within an original manufacturing process; and

(i) compostable or recyclable materials when composted or recycled in an operation not required to be assigned pursuant to 310 CMR 16.05(2) through (5).

Solid Waste Management Facility (*see* "Facility")

Speculative Accumulation means the accumulation or storage of a recyclable or compostable material where the recycling or composting of the material is not occurring or cannot reasonably be expected to occur in the future. Any recyclable or compostable material that is speculatively accumulated is deemed to be a solid waste. Speculative accumulation arises when:

(a) it is not feasible to recycle or compost the material; or
(b) less than 75% by weight or volume, as appropriate, of the recyclable or compostable material is recycled or composted or transferred off-site for recycling or composting within a time frame to be determined by the Department.

Storage means the temporary containment of solid waste or compostable or recyclable materials in a manner which does not constitute disposal.

Storage Facility means a handling facility where solid waste is temporarily stored in a manner not constituting disposal.

Suitable means a determination by the Department that a proposed site meets the Site Suitability Criteria as set forth in 310 CMR 16.00.

Transfer Station means a handling facility where solid waste is brought, stored and transferred from one vehicle or container to another vehicle or container for transport off-site to a solid waste treatment, processing or disposal facility.

Treatment means the use of any method, technique or process to change the chemical, or biological character or composition of any solid waste; to neutralize such waste; to render such waste safer to transport, store or dispose; or make such waste amenable to recovery, storage or volume reduction.

Upgradient means:

(a) in reference to surface water, the direction perpendicular to lines of equal elevation over a distance in which elevation continuously increases, measured from the point or area in question; or
(b) in reference to groundwater, the direction perpendicular to lines of equipotential over a distance in which total head continuously increases, measured from the point or area in question.

Vegetative Material means source-separated material which consists solely of vegetative waste such as fruits, vegetables and grains, that is produced from food preparation activities at, but not limited to: grocery stores; fruit or vegetable canning; freezing or preserving operations; and food or beverage processing establishments.

Watershed means that area defined by 310 CMR 22.02, *Drinking Water*.

Wood Waste means discarded material consisting of trees, stumps and brush, including but not limited to sawdust, chips, shavings and bark. Wood waste does not include new or used lumber or wood from construction and demolition waste and does not include wood pieces or particles containing or likely to contain asbestos, or chemical preservatives such as creosote or pentachlorophenol, or paints, stains or other coatings.

Yard Waste means deciduous and coniferous seasonal deposition (*e.g.*, leaves), grass clippings, weeds, hedge clippings, garden materials and brush.

Zone A means that area defined by 310 CMR 22.02, *Drinking Water*.

Zone B means that area defined by 310 CMR 22.02, *Drinking Water*.

Zone C means that area defined by 310 CMR 22.02, *Drinking Water*.

Zone of Contribution means the recharge area that provides water to a well.

Zone I means that area defined by 310 CMR 22.02, *Drinking Water*.

Zone II means that area defined by 310 CMR 22.02, *Drinking Water*.

16.03 Time

(1) Computation of Time. Unless otherwise specifically provided by law, 310 CMR 16.00, and any determination issued pursuant to 310 CMR 16.00, any time period prescribed or referred to in 310 CMR 16.00 shall begin with the first day following the act which initiates the running of the time period, and shall include every calendar day, including the last day of the time period so computed. If the last day is a Saturday, Sunday, legal holiday, or any other day in which the Department's offices are closed, the time period shall run until the end of the next business day. If the time period prescribed or referred to is six days or less, only days when the offices of the Department are open shall be included in the computation.

(2) Timely Filing. Papers required or permitted to be filed under 310 CMR 16.00, or any provision of the applicable law must be filed at the board of health office or such other place as the board of health, Department or 310 CMR 16.00 shall designate within the time limits for such filings as set by 310 CMR 16.00. Papers filed in the following manner shall be deemed to be filed as set forth herein:

(a) hand-delivery during business hours shall be deemed filed on the day delivered;
(b) hand-delivered during non-business hours shall be deemed filed on the next regular business day; and
(c) mailing by placing in U.S. mail shall be deemed filed on the date so postmarked.

(3) All papers shall show the date received by the board of health and the Department, and the board of health and the Department shall cooperate in giving date receipts to Persons filing papers by hand-delivery.

16.04: Severability

It is hereby declared the provisions of 310 CMR 16.00 are severable, and if any provision hereof or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions of 310 CMR 16.00, and the application thereof to persons or circumstances which can be given effect without the invalid provision or application.

16.05: Applicability

(1) General. 310 CMR 16.00 shall govern the process of application, review, public hearing and decision for a site assignment to expand a solid waste management facility or establish a new solid waste management facility at an unassigned site.

(2) Facilities and Operations to Which 310 CMR 16.00 Does Not Apply. 310 CMR 16.00 does not apply to the following facilities or operations:

(a) Hazardous Waste Facilites. Facilities that manage hazardous wastes which are regulated pursuant to 310 CMR 30.000;

(b) Waste Water Treatment Residuals Facilities. Facilities which manage waste-water treatment plant residuals subject to the siting process pursuant to M.G.L. c. 83, § 6 and regulated pursuant to 314 CMR 12.00, provided that 310 CMR 16.00 does apply to solid waste management facilities which co-dispose waste-water treatment plant residuals with solid waste;

(c) Small Combustion Facilities. Solid waste combustion facilities that are rated by the Department at one ton per hour or less pursuant to M.G.L. c. 111, § 150A;

(d) Farming Operations. The use or application of agricultural manures in normal farming operations.

(e) Solid Waste Storage Containers. Dumpsters, roll-offs, or other temporary storage containers located at, and used exclusively for the collection of solid waste generated by an apartment house or complex, condominium association, school, recreational areas, industrial or commercial establishment, office, individual residence or farm, construction site or demolition site, other than a CRT Operation;

(f) Manufacturing and Industrial Operations. The following classes of manufacturing or industrial operations which temporarily store and/or utilize pre-sorted recyclable materials in the manufacturing or industrial process, including:

1. paper mills, including de-inking plants and paperboard manufacturers;
2. steel mills;
3. aluminum smelting operations and mills;
4. glass manufacturing plants;
5. plastic manufacturing plants;
6. tire re-capping plants;
7. de-tinning plants;
8. asphalt batching plants;

(3) Conditionally Exempt Recycling Operations. The following recycling operations or activities do not require a site assignment provided the operation incorporates good management practice, is carried out in a manner that prevents an unpermitted discharge of pollutants to air, water or other natural resources of the Commonwealth and results in no public nuisance:

(a) Recycling Drop-Off Centers. Recycling drop-off centers.

(b) Bottle Bill Handling Operations. Operations which collect, store, and process only beverage containers subject to the provisions of M.G.L. c. 94, §§ 321 through 326.

(c) Paper Baling and Handling. Baling and handling operations that process only recyclable paper (includes all grades of paper and paperboard).

(d) Recycling Operations. Operations processing, transferring or temporarily storing recyclables, but not including operations which recycle construction and demolition debris or special wastes, which comply with the following additional conditions:

1. the operation receives only recyclable material pre-sorted by the original generator;
2. the operation receives no more than 100 tons per day (tpd) of recyclable materials, including incidental solid waste, but not including paper;
3. the operation receives, handles and stores recyclable materials, incidental solid waste and residues only within an enclosed handling area or adequately covered containers or trucks;
4. the amount of residue generated by a processing operation does not average more than 15% of the weight of the recyclables processed during any quarter.
5. there is no speculative accumulation of any material. For purposes of 310 CMR 16.05, speculative accumulation shall be presumed to occur if materials, whether in their as-received, in-process or processed condition, are stored for more than 90

days from the date of their receipt at the recycling operation. This time limit may be exceeded in the case of storage of a processed material pending accumulation of a transportable load (one full truck load).

6. accurate records are maintained and certified reports are submitted every 90 days for the first year of operation and once a year thereafter which provide information to enable the Department to determine that the operation has complied with the conditions set forth at 310 CMR 16.05(3)(d)1. through 5. (Reports shall be filed with the appropriate Department regional office and with the board of health); and

7. at least 30 days prior to commencement of operations, the operator, on a form as may be supplied by the Department, notifies the Department and the board of health of the intent to operate.

(e) Asphalt Pavement, Brick and Concrete Recycling Operations. An asphalt pavement, brick or concrete rubble processing (crushing) operation when:

1. the operation is located at:
   a. an active quarry or active sand and gravel pit where any asphalt pavement, brick and concrete rubble transported to the site of the operation is pre-sorted so it contains only asphalt pavement, brick or concrete rubble; or
   b. the site of a demolition/construction project where all the asphalt pavement, brick and concrete rubble processed is generated at the site;
2. the rubble consists solely of asphalt pavement, brick and concrete that is clean and not mixed with or contaminated by any other wastes or debris;
3. the asphalt pavement, brick and concrete rubble is processed so the maximum length of the largest dimension of any piece of rubble is less than six inches;
4. all rebar is removed in the process and is recycled or disposed in an approved facility;
5. there is no speculative accumulation of the asphalt pavement, brick and concrete rubble or rebar prior to or after crushing and accurate records are maintained that are adequate for the Department to determine whether speculative accumulation is occurring; and
6. at least 30 days prior to commencement of operations, the operator notifies the Department and the board of health using a form as may be supplied by the Department.

(f) CRT Operations. A CRT Operation, provided that the CRT Operation and its operator comply with the following additional conditions:

1. The CRT Operation and its operator shall collect, store, handle and transport CRTs in a manner that prevents and minimizes breakage, and shall immediately contain all releases resulting from inadvertent breakage of CRTs, clean up any broken material and safely package any broken material in containers resistant to puncture by glass pieces;
2. The CRT Operation and its operator shall store and maintain CRTs segregated from any solid waste;[3]
3. When shipping a Non-commodity CRT to foreign countries, a CRT Operation and its operator shall meet the requirements at 310 CMR 30.1039;
4. A CRT Operation and its operator shall transfer Non-commodity CRTs only to another CRT Operation, a CRT recycling facility,[4] or a permitted hazardous waste treatment, storage and disposal facility;
5. A CRT Operation and its operator shall label Non-commodity CRTs as follows: "Non-commodity Cathode Ray Tubes" or "Non-commodity CRTs;"
6. A CRT Operation and its operator shall hold a CRT for no longer than one year from its date of receipt. A CRT stored for more than one year shall be presumed to be a Non-commodity CRT. Such presumption may be rebutted if the operator has documentation demonstrating that the CRT is intended to be returned to service as an operable CRT. A CRT Operation and its operator may store CRTs for longer than one year from the date of receipt solely for the purpose of accumulating such quantity of CRTs as is necessary to facilitate proper shipment (*e.g.* economically

viable load), recovery, treatment or disposal. A CRT Operation and its operator bear the burden of demonstrating the need for any such additional period of accumulation.

7. If a CRT Operation accumulates more than 40 tons of Non-commodity CRTs on-site for more than 21 calendar days, then the CRT Operation and its operator shall:

a. Notify the Department in writing of their activity within ten days of the first occurrence. Once the threshold is exceeded during a calendar year, an Operation shall retain its regulated status under this provision for the remainder of the calendar year. A CRT Operation who has not already notified the Department of its CRT activities and anticipates accumulating 40 tons or more of Non-commodity CRTs shall send written notification to the Department, before meeting or exceeding the 40 ton/21 day limit;

b. Maintain records of incoming and outgoing CRTs, including from where each shipment was received and where each shipment was sent;

c. Maintain a system that demonstrates the duration of CRT accumulation; and

d. Maintain records for three years. This period shall extend automatically for the duration of any enforcement action.

8. The CRT Operation and its operator allow DEP to enter the facility to conduct inspections.

9. A CRT Operation and its operator that violate any of the above conditions may be subject to enforcement pursuant to 310 CMR 16.05(11).

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[3]In other words, do not put CRTs in a dumpster.

[4] CRT recycling facilities include out-of-state smelters and facilities that conduct glass-to-glass recycling.

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(4) Conditionally Exempt Composting Operations. The following composting operations and activities do not require a site assignment provided the operation incorporates good management practice, is carried out in a manner that prevents an unpermitted discharge of pollutants to air, water or other natural resources of the Commonwealth, and results in no public nuisance:

(a) Backyard Composting. Backyard composting.

(b) Leaf Composting Operations. Operations which transfer or compost clean leaves and yard waste containing no greater than 25% grass clippings by volume provided that less than 50,000 cubic yards or less than 10,000 tons total are on site at any one time, with a maximum volume per unit area of 5,000 cubic yards per acre, and either:

1. the operation is registered with the Department; or
2. the operation is located within the property boundaries of the site where all the leaf and yard waste is generated;

(c) Agricultural Waste Composting. A composting operation for agricultural wastes, when located on a farm engaged in "agriculture" or "farming" as defined in M.G.L. c. 128, § 1A. Such composting operation may, in addition to agricultural wastes, utilize the following compostable materials, provided the operation is registered and complies with policies of the Department of Food and Agriculture:

1. leaf and yard waste;
2. wood wastes;
3. clean newspaper or cardboard;
4. clean, compostable (i.e. thin) shells, and clean bones;
5. non-agricultural sources of manures and animal bedding materials.
6. less than 20 cubic yards or less than ten tons per day of vegetative material; and
7. less than ten cubic yards or less than five tons per day of food material.

(d) Composting on Industrial, Commercial or Institutional Sites or Zoos. A composting operation located at an industrial, commercial or institutional site or zoo which composts less than four cubic yards or less than two tons per week of vegetative materials, food materials or animal manures that are generated on-site; and where, at least 30 days prior to commencement of operations, the operator notifies the Department and the board of health, using a form as may be supplied by the Department.

(5) Other Conditionally Exempted Operations. The following operations do not require a site assignment or a Solid Waste Management Facility Permit pursuant to 310 CMR 19.000, provided the operation incorporates good management practice, is carried out in a manner that prevents an unpermitted discharge of pollutants to air, water or other natural resources of the Commonwealth and results in no public nuisance:

(a) Temporary Storage by Public Works Departments. Dumpsters, roll-offs, or other temporary storage containers or temporary storage areas at a location controlled by a public works department such as a municipal department of public works, the Massachusetts Highway Department, Massachusetts Turnpike Authority, Metropolitan District Commission or similar government agency, when used exclusively for solid waste generated and collected by the public works department and when storage is appropriate for the type of waste (e.g., materials such as trash from roadside trash barrels are stored in dumpsters or roll-offs while materials such as street sweepings may be stored without containers);

(b) Hospital and Laboratory Infectious Waste Storage Areas. Hospitals, medical laboratories and biotechnology companies which accept for storage, pending off-site treatment or disposal, infectious waste generated on-site by the hospital, medical laboratory or biotechnology company, or infectious waste generated off-site, provided:

1. the hospital, biotechnology company or laboratory has sufficient properly designed and operated infectious waste storage areas and manages all infectious waste in compliance with the Regulations for Storage and Disposal of Infectious or Physically Dangerous Medical or Biological Waste, State Sanitary Code Chapter VIII, 105 CMR 480.000; and
2. the hospital, biotechnology company or medical laboratory accepts and stores off-site generated infectious waste with on-site generated infectious waste only as follows:
    a. Hospitals. Collects and stores infectious waste generated off-site from hospitals or clinics which the hospitals owns, or from hospitals, clinics or physicians with whom the hospital has a professional affiliation for the provision of medical services.
    b. Medical Laboratories. Collects and stores infectious waste generated off-site from laboratories it operates, or generated off-site by customers to whom the laboratory provides laboratory services and only to the extent that the infectious waste collected from such customers and stored does not, on a daily basis, exceed the amount of infectious waste generated on-site from the laboratory's own laboratory activities.
    c. Biotechnology Companies. Collects and stores infectious waste generated off-site from the company's biotechnology operations conducted at buildings owned or leased by the company.
3. the infectious waste storage area would not otherwise require a site assignment or solid waste management facility permit pursuant to 310 CMR 16.00 and 310 CMR 19.000, respectively.

(c) Occasional Solid Waste Vehicle Layover. Sites owned or leased by a solid waste transporter for purposes of truck storage or repair where enclosed trucks, trailers and other solid waste handling and transfer equipment containing loads of solid waste are occasionally stored for overnight or weekend layover prior to transportation to a solid waste management facility, provided:

1. there is no unloading or transfer of the solid waste from the container or vehicle to the ground or to another container or vehicle; and
2. the zoning of the truck storage or repair site would not disallow such an activity

or use.

(d) Residential Disposal of Wood Wastes. Disposal of wood wastes at an existing single family residence or farm where the wood wastes are generated and disposed within the boundaries of such residence or farm by the occupant or resident of that residence or farm. (*i.e.*, wood wastes generated by a developer while clearing land prior to constructing the residence are not covered by this exemption.)

(e) Wood Chipping and Shredding Operations. Wood chipping and wood shredding operations when:

1. only brush, stumps, lumber ends and trimmings, wood pallets, bark, wood chips, shavings, slash and other clean wood, which are not mixed with other solid wastes, are processed;
2. no wood containing or likely to contain asbestos, glues, or chemical preservatives such as creosote, pentachlorophenol, paints, stains or other coatings is processed;
3. there is no speculative accumulation of wood or wood chips prior to or after processing. For purposes of 310 CMR 16.05(e), the accumulation time period that determines if speculative accumulation is occurring shall be 90 days; and
4. at least 30 days prior to commencement of operations, the operator notifies the Department and the board of health, using a form as may supplied by the Department.

(f) Occasional Non-commodity CRT Vehicle Layover[5]. Sites owned or leased by transporters of Non-commodity CRTs to hold Non-commodity CRTs prior to transportation to a CRT operation, a CRT recycling facility, or a permitted hazardous waste treatment, storage or disposal facility, provided that Non-commodity CRTs are held in a vehicle at the site for no longer than ten days.

(g) Tire Chipping, Shredding or Other Tire Processing Operations. Tire chipping, shredding or other tire processing operations when:

1. only tires or tires with wheel rims attached, which that are not mixed with other solid waste, are processed;
2. the quantity of whole tires on site does not exceed the number of tires that can be processed in a 24 hour period or 1000 tires, whichever is greater;
3. the total quantity of processed tires (tire chips, shreds or other tire derived products) at the site does not exceed 5 times the weight of tires that can be processed in a 24 hour period or the equivalent of 5000 tires, whichever is greater;
4. whole tires or and processed tires are stored in buildings, covered containers or covered to prevent the infiltration of water;
5. whole tires or and processed tires are stored in accordance with 310 CMR 7.00 and local fire department requirements for storing combustible material;
6. there is no speculative accumulation of tires and/or processed tires prior to or after processing. For purposes of 310 CMR 16.05(5)(f) the time period for evaluating if speculative accumulation is occurring shall be 30 days;
7. processed tires are:
   a. used to make new synthetic polymers ("rubber");
   b. used in accordance with a Beneficial Use Determination (310 CMR 19.060) or other approval required by the Department;
   c. combusted in a facility that is not a solid waste facility in accordance with a specific air quality approval issued under 310 CMR 7.00 that approves the combustion of tires or processed tires as an alternative fuel; or
   d. handled in a solid waste facility; and
8. at least 30 days prior to commencement of operation, the operator notifies the Department, the Board of Health, and the local fire department using a form as may be supplied by the Department.

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[5] This provision creates a conditional exemption for locations where transporters handle CRTs.

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(6) Determination of Need for Site Assignment. The Department shall make a determination of need for site assignment for the following operations upon application pursuant to 310 CMR 16.05(7). These operations shall be presumed to be solid waste management facilities unless the Department issues a determination that site assignment is not required:

(a) recycling operations not exempted under 310 CMR 16.05(3) and handling only pre-sorted recyclable materials; and

(b) composting operations not exempted under 310 CMR 16.05(4) and which accept the following types and amounts of materials:

1. greater than 50,000 cubic yards or 10,000 tons of leaves and yard waste on site at any time, with a maximum volume per unit area of 5,000 cubic yards per acre;
2. less than or equal to 40 cubic yards or 20 tons per day of vegetative material (including vegetative sludges);
3. less than or equal to 20 cubic yards or 10 tons per day of food material (including food sludges) or paper sludges.

(c) agricultural composting operations which are not exempt under 310 CMR 16.05(4)(c).

(7) Determination Process.

(a) Any person making application for a determination of need for site assignment under 310 CMR 16.05(7) shall submit an application using forms and procedures specified in 310 CMR 4.00: *Timely Action Schedule and Fees Provisions* to:

1. the appropriate regional office of the Department; and
2. a copy to the board of health of jurisdiction.

(b) Information on Materials. The following information, where applicable for a given material, shall be provided by the applicant:

1. a general description of the recyclable or compostable material;
2. a chemical and/or physical characterization of the recyclable or compostable material where specifically required by the Department;
3. identification of the quantity, quality and sources of the recyclable or compostable material;
4. the proposed method(s) for recycling or composting the material;
5. a description of the product(s) to be made from the material or a description of the use to which the material will be put;
6. appropriate documentation that markets or uses exist for the compost, recyclable materials or products; and
7. other information or data as required by the Department.

(c) Information on the Site. The application shall include the following descriptions, plans or other information, where deemed necessary by the Department:

1. a locus map indicating the location of the proposed facility;
2. a site map indicating:
   a. the zoning classification of the site and adjacent areas; and
   b. the location of all wetlands on and adjacent to the site;
3. site and design plans which include:
   a. the location and size of all on-site storage areas for recyclable or compostable materials and products; and
   b. the layout of all processing equipment, buildings, roads, run-on and run-off controls, where applicable, and other appurtenances.
4. the proposed method or methods for pre-sorting recyclable or compostable materials from other solid wastes prior to delivery to the facility;
5. a description of all processing equipment to be used at the facility (for example grinders, shredders, air classifiers, and screening equipment);
6. the quantity and quality of any wastewater to be produced and the proposed method of discharge;
7. the quantity and quality of any residues and off-specification materials generated and how and where these wastes will be disposed; and
8. other site specific information as required by the Department.

(d) Criteria for Department Determination of Need. The Department shall use the

following criteria to determine if a site assignment is required:

1. the application is accurate and complete;
2. the material meets the definition of a recyclable or compostable material. In determining if a material is compostable or recyclable the Department may consider, but not be limited to, the nature of any contaminants and their probable effect on products or public health, safety and the environment;
3. the material can feasibly be processed, if applicable, and recycled or composted under the proposal set forth in the application;
4. the material is pre-sorted. In determining if a material is pre-sorted the Department may consider the relative proportion of solid waste to incoming recyclable or compostable materials;
5. the quantity of residues generated through the processing of recyclable or compostable materials, including rejects, does not average more than the following percentages by weight or volume where applicable, as determined by the Department, of materials handled during any quarter:
    a. 5% for the recycling of demolition debris or construction material;
    b. 5% for composting of leaf and yard waste;
    c. 15% for recycling of post-consumer recyclables;
    d. such other percentage for other materials as the Department may establish in order to minimize residue generation. The residue generation criteria may be modified by the Department under the following circumstances;
        i. the industry average for processing materials of the same nature utilizing the best available processing equipment is different than the percentages set forth in 310 CMR 16.05(7)(d)5.a. through c. ii. the scale of the facility is sufficiently small that actual residue generation is minimal; iii. the facility is a demonstration or pilot project of fixed limited duration.
6. there will be no speculative accumulation of materials;
7. the facility will not operate as a de facto transfer station, solid waste storage facility or processing facility, for which a site assignment would be required;
8. materials and products will be handled in a manner which will not cause the development of nuisance conditions and will ensure protection of public health and safety and the environment; and
9. the proposed project can be successfully completed in compliance with all other appropriate local, state and federal rules and regulations.

(e) Determinations of Need.

1. All Department decisions regarding determinations of need for site assignment for recycling or composting facilities shall be made in writing. 2. The Department shall issue a draft determination and send a copy to the applicant and board of health.
3. The Department shall accept written comments up to 21 days from the date of issuance of the draft determination. Commentors may, in their comments, request the Department to revise with conditions a draft determination or show why the facility should be required to obtain site assignment as a solid waste management facility.
4. The Department shall issue a final determination following the 21 day comment period.
5. The Department may make a determination that no site assignment is needed subject to the applicant's compliance with conditions. These conditions may include, but are not limited to:
    a. requirements to ensure that only exempt recycling or composting operations are conducted on the site;
    b. weighing and operational reporting requirements, including maintenance of a daily log of the quantity of materials received and shipped, estimation or weighing of materials, depending on facility size, and regular certified reports detailing operating conditions and material disposition;
    c. the authority of the Department or the board of health without prior notice

to periodically enter upon and inspect the site, the facility and relevant operating records to determine and compel compliance with applicable regulations and the conditions of the determination;
d. payment of penalties in accordance with the provisions of M.G.L. c. 21A, § 16 for violation of a condition or other requirement; and
e. a termination date.

(8) Violations of the Conditions of a Determination. In the event of a violation of applicable regulations or conditions established in a determination the Department may modify, suspend or revoke the determination or initiate an enforcement action in accordance with applicable statutes or regulations. Where a determination is suspended, operations shall cease until:
(a) the operator corrects the violation to the satisfaction of the Department; or
(b) the operator applies for and obtains a site assignment and solid waste management facility permit.

(9) Project Modifications.
(a) The proponent shall notify the Department and the board of health of proposed changes in design or operations where:
1. the facility operator intends to recycle or compost material(s) substantially different from those materials for which the current determination was granted;
2. the design and/or operation of the facility is to be altered; or
3. the facility operator proposes to increase the volume or quantity of materials to be handled by the operation above that volume or quantity established in the current determination.
(b) Where the Department determines that the change in design or operation is significant, the Department may require a revised application for determination of need be submitted to the Department, with a copy submitted to the board of health, for review. The board of health may comment within 21 days on any proposed modification.

(10) Demonstration Projects for Recycling or Composting Pre-Sorted Material. The Department may approve projects to demonstrate innovative recycling or composting techniques at unassigned sites as provided below.
(a) General Conditions. The following conditions shall apply to all demonstration projects approved under 310 CMR 16.05(10):
1. The materials to be processed shall be limited to the pre-sorted recyclable or compostable materials permitted to be processed by operations set forth at 310 CMR 16.05(3) and (4); and
2. projects shall be limited to a specified time period not to exceed one year, after which time they shall terminate unless appropriate approvals are obtained.
(b) Application. An application to conduct a recycling or composting demonstration project shall be submitted to the Department, the board of health and, in the case of agricultural composting, to the Department of Food and Agriculture. The application shall contain:
1. the information described at 310 CMR 16.05(7)(b) and (c) as required by the Department; 2. the proposed duration of the demonstration project; and
3. a description and schedule of interim and final reports to be submitted to the Department describing and evaluating the project.
(c) Criteria for Department Determination. The Department shall consider the following criteria when determining whether to allow the demonstration project:
1. the potential for adverse impacts taking into account the recyclable and compostable materials, project location, design and operating controls, management practices and operator experience;
2. the likelihood of obtaining useful, new information in the time frame proposed for the demonstration project; and
3. the ability of the applicant to appropriately use or dispose of all project materials.

(d) Department Decision. The Department shall follow the procedure described at 310 CMR 16.05(7)(e)1. through 4. when issuing its decision on whether to allow the demonstration project.

(11) CRT Enforcement Provisions.

(a) General. Any failure by any person whose activities are governed by M.G.L. c.111, § 150A and 310 CMR 16.00 to comply fully with requirements or conditions established under 310 CMR 16.00 or with the provisions of any determination or order issued pursuant to 310 CMR 16.00 shall constitute a violation of the statute and 310 CMR 16.00. Nothing in 310 CMR 16.00, or in any order issued pursuant thereto, shall be construed to limit any right of the Department to take enforcement action pursuant to any other authority.

(b) Action by the Department. Whenever the Department has cause to believe that a violation has occurred, it may without limitation:

1. order the owner or operator, or any other person responsible for the violation, to cease operations until the violation is corrected to the satisfaction of the Department or such person obtains a site assignment and solid waste management facility permit;
2. order the owner or operator, or any other person responsible for the violation, to cease all illegal activity immediately or at a specified date, and to comply fully with the provisions of the statute, 310 CMR 16.00, or any determination or conditions under 310 CMR 16.00;
3. order the owner or operator, or other person responsible for the violation, to take appropriate remedial measures immediately or by a specified date to bring the site into compliance or to protect public health or safety or the environmental resources of the Commonwealth, including without limitation closure of the site;
4. rescind, suspend, revoke, or modify any determination or conditions under 310 CMR 16.00;
5. issue a notice of non-compliance or assess a civil administrative penalty pursuant to M. G.L. c. 21A, § 16 and 310 CMR 5.00;
6. refer the matter to the Attorney General for civil or criminal action pursuant to any applicable statute; or
7. take such other action provided by 310 CMR 16.00 or other applicable statutory or regulatory authority as the Commissioner deems appropriate.

(c) Right to Adjudicatory Hearing. A person who is the subject of an order issued pursuant to 310 CMR 16.05(11) shall have the right to an adjudicatory hearing on such order pursuant to 310 CMR 1.00. Any right to an adjudicatory hearing concerning assessment of a civil administrative penalty shall be determined in accordance with the provisions of 310 CMR 5.00.

(d) Waiver of Right to Adjudicatory Hearing. Any person who is the subject of an order issued pursuant to 310 CMR 16.05(11) shall be deemed to have waived the right to an adjudicatory hearing unless within 21 days of the date of service of the order the Department receives a written statement setting forth the basis for the request, subject to and in compliance with the applicable provisions of 310 CMR 1.00.

16.06: Prohibitions

No place in any city or town shall be maintained or operated as a site for a facility unless such place has been assigned by the board of health or the Department, whichever is applicable, pursuant to M.G.L. c. 111, § 150A. Any disposal of solid waste at any location not so assigned shall constitute a violation of said statute and of 310 CMR 16.00.

16.07: Certification

Any person, required by 310 CMR 16.00 or any order issued by the Department, to submit papers shall identify themselves by name, profession, and relationship to the applicant

and legal interest in the proposed site, and make the following certification: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties both civil and criminal for submitting false information including possible fines and imprisonment."

16.08: Site Assignment Application Submission Requirements

(1) General. Any person wishing to establish a new facility at a New Site or to Expand a Site onto an area not previously assigned must file a Site Assignment Application (application) with the board of health and provide copies as specified at 310 CMR 16.08(2).

(2) Copies. The applicant shall file:
(a) two copies of the application with the local board of health;
(b) one copy of the application with the local library;
(c) two copies of the application with the Department, one to the Business Compliance Division, Boston, and one to the regional office in which the proposed site is located;
(d) one copy of the application with the Massachusetts Department of Public Health, Bureau of Environmental Health Services, Boston;
(e) one copy of the application with the board of health ("abutting board of health"), and one copy with the library of any municipality within ½ mile of the proposed site assigned area;
(f) one copy of the application with the applicable regional planning agency duly established by the Legislature and governing the municipality in which the proposed facility is to be located.; and
(g) one copy of the application with any Person requesting it during the public comment period, except that the applicant may charge the reasonable cost of reproduction for the copies requested under this provision. The applicant shall maintain a list of each Person requesting a copy, the date of each request, and the date each copy was sent out.

(3) Service of Copies. Simultaneous with the filing of any and all papers with the board of health, the applicant filing such papers shall send a copy(ies) to the Department and the Department of Public Health, as prescribed in 310 CMR 16.08(2). All papers filed with the board of health shall be accompanied by a certificate signed under the pains and penalty of perjury that copies have been sent, specifying the mode of service, date mailed or delivered, the address, and address of service. Failure to comply with these requirements shall be grounds for refusal by the board of health or the Department to accept papers for filing.

(4) Fees. The applicant shall tender payment of the Technical Fee in accordance with 310 CMR 16.30(2)(b) or enter into alternative fee payment arrangements to the satisfaction of the board of health.

(5) Site Assignment Application.
(a) General. The application shall be completed using forms supplied by the Department and shall contain sufficient data and other relevant information to allow the Department and the board of health to determine, independent of additional information, whether the site is suitable. The level of analysis presented in an application shall be commensurate with the nature and complexity of the proposed facility.
(b) Preparation of Papers. All papers pertaining to design, operation, maintenance, or engineering of a site or a facility shall be prepared under the supervision of a registered professional engineer knowledgeable in solid waste facility design, construction and operation and shall bear the seal, signature and discipline of said engineer. The soils,

geology and groundwater sections of an application, if applicable, shall be completed by professionals experienced in those fields under the supervision of a registered professional engineer. All mapping and surveying shall be completed by a registered surveyor.

(c) Waiver. The application shall clearly state whether a waiver, as provided in 310 CMR 16.18 or 310 CMR 16.40(6), is requested. Applications for waivers shall be independent of the main body of the Site Assignment Application and shall include:

1. reference to the specific criteria or provision for which the waiver is requested;
2. all documentation that the applicant wants to present in support of the waiver including detailed facility design plans where appropriate.

(d) Massachusetts Environmental Policy Act (MEPA).

1. The application shall include a demonstration that:
   a. the MEPA process does not apply; or
   b. the MEPA process does apply and the Secretary has determined that an EIR is required; or
   c. the MEPA process has already been completed and the Secretary has issued a certificate or a determination that no EIR is required.
2. The first Technical Review Period (TR1) as specified under the Timely Action and Fee Provisions Regulations, 310 CMR 4.00, shall not be completed until the Secretary's final certificate has been issued.

(e) Signatures. Applications shall be signed and sworn to by the applicant(s) and his/her agent, if different, as to all statements of fact therein, as set forth in 310 CMR 16.07. Where the applicant is not the owner in fee simple of the title or interest in the site, then said owner shall also sign the application.

(6) Confidentiality. Any information submitted pursuant to 310 CMR 16.00 may be claimed as confidential by the applicant in accordance with the provisions of 310 CMR 3.00, Access to and Confidentiality of Department Records and Files. Information regarding the name and address of the permittee and data related to the potential impact of the proposed activity on public health, safety and the environment shall not be classified as confidential.

16.09: Public Access to Application

The board of health shall ensure that a copy of the application and all subsequent filings are available for reasonable public inspection and copying. The board of health may charge reasonable fees for such copying.

16.10: Review of Application for Completeness

(1) Report Number. The Department shall assign a Report Number to each application when the application is filed with the Department and notify the applicant, the board of health, and the Department of Public Health. The Report Number shall be used in all subsequent correspondence with the board of health, the Department, the applicant and the Department of Public Health and shall appear on any subsequent filings by the applicant.

(2) Public Comments. During the Determination Period, as defined in 310 CMR 16.10(3) the Department shall accept written comments from the board of health or interested persons regarding the completeness of the application.

(3) Determinations. The Department shall issue a written determination to the applicant as to the completeness of the application on or before 21 days after the filing of said application with the Department. An application shall not be considered complete unless the Technical Fee, if any, has been paid and the application forms are complete and accompanied by the appropriate supporting documentation. If the Department determines that the application is incomplete, deficiencies shall be stated. The Department shall send a copy of such

determination to the board of health and the Department of Public Health.

(4) Public Notice of Application. The applicant, after receipt of notice of completeness from the Department, shall notify all parties identified at 310 CMR 16.08(2) and abutters to the site, by certified mail, and provide public notice, that an application has been filed with the local board of health. The notice shall:

(a) appear in at least one newspaper that has general circulation within the municipality and in the Massachusetts Environmental Policy Act (MEPA) Monitor, where the proposed facility was required to file an Environmental Notification Form (ENF) or Environmental Impact Report (EIR) with MEPA, ;

(b) include the location of the site; the size of the site; the type of facility; the type of waste or material to be handled at the facility; daily tonnage or throughput; the names, and addresses of the proponents and the person to whom requests for copies of the application should be directed; the public location within the community and hours where the application may be inspected; the time period for comment to be received by the Department and the address to which the comments should be mailed; and

(c) where the municipality has a population of greater than 15% of residents who do not speak English as their primary language, the applicant shall publish an additional notice in a daily or weekly newspaper(s) circulated in that community written in the primary language(s) of these residents.

(5) Commencement of Review Period. The Department Review Period shall commence when the applicant has provided proof to the Department that the public notice requirement as set forth in 310 CMR 16.10(4) has been satisfied. Proof may be in the form of a copy of the public notice in the publication.

16.11: Review Period

(1) General. Upon commencement of the Review Period, the Department shall review the application to determine if the site is suitable.

(2) Public Comments. During the initial 21 days of the Review Period the Department shall accept written comments from the board of health or other interested persons regarding the suitability of the site. All comments shall be filed with the Department's Regional Office in which the proposed site is located. The Department shall make available all comments received regarding the application to the applicant and the board of health at their request.

(3) Applicant Response and Modification.

(a) Response to Comments. The applicant may respond in writing and/or the Department may require the applicant to respond to comments during the initial 40 days of the Review Period.

(b) Modification of Application. During the initial 40 days of the Review Period the applicant may modify an application provided that said modifications, when taken in their totality, do not constitute a major modification. The Department shall determine if modifications are major and issue written notice of such determinations to the applicant.

(c) Major Modifications. The applicant must notify the Department and the board of health within five days of receipt of a notice from the Department that a single modification or a series of modifications constitute a major modification, whether it intends to:

1. withdraw the application; or
2. withdraw the modifications and let the Department review of the application continue on the unmodified application.

(4) Failure to File Notification. Failure of the applicant to file a notification within the appropriate time will constitute a withdrawal pursuant to 310 CMR 16.11(3)(c)2.

(5) Additional Information. The Department may require the applicant to provide additional information as the Department deems necessary to fully evaluate if the site is suitable.

(6) Restricting of Comments or Response. After 40 days the Department may restrict further comments or responses to allow the completion of the Department review of the site.

(7) Issuance of Report. The Department shall issue the Report on Suitability (Report) within 60 days of the receipt of proof that the public notice requirement set forth in 310 CMR 16.10 (4) has been satisfied.

16.13: Department Report On Suitability (Report)

(1) General. The Department shall forward the Report and the accompanying record to the board of health and shall provide a copy of the Report to the applicant.

(2) Content. The Report shall include:
(a) the Report Number;
(b) a statement indicating that the application does or does not contain sufficient data to allow the Department to determine if the site meets the criteria. A determination that an application did not contain sufficient information to allow a determination on each criteria shall be sufficient grounds for a negative determination of suitability;
(c) a statement that the site meets or fails to meet each the site suitability criteria set forth in 310 CMR 16.40, including any conditions; and
(d) findings of fact pertaining to the application, any waiver that was requested, and the suitability of the site.

(3) Basis for Report. The Report shall be based upon:
(a) the record;
(b) the facts and information otherwise available to the Department;
(c) expertise of the Department;
(d) expertise of other local, state or federal agencies consulted by the Department.

(4) Record. The record shall consist of the application, including any waivers requested or any modifications submitted; any report or records the Department has used in making its determination; and any and all correspondence, notices, and written comments by the Department, boards of health, applicant or the public which have been submitted in accordance with 310 CMR 16.00.

(5) Public Access. The board of health shall ensure that the Department's Report on Suitability and the Department Record are made available for copying and reasonable inspection.

16.14: Reconsideration of Findings

(1) Motions for Reconsideration. When the Department's Report contains a finding that the site fails to meet the site suitability criteria, the Department may entertain written motions for reconsideration from the applicant stating the basis on which the reconsideration is requested, if filed within 14 days of issuance of the Report. The motion for reconsideration shall state the fact(s) which it is contended the Department has overlooked or misapprehended and shall contain such argument in support of the motion as the applicant desires to present. Action on any motion for reconsideration is at the discretion of the Department.

(2) Comments. The Department may allow comments from the board of health, the

Department of Public Health and the general public for a specified time period if it decides to reconsider the findings.

(3) Reissuance of Report. In the event the Department reconsiders and changes its determination, it shall amend the Report accordingly and reissue the Report.

16.15: Further Action on Application

(1) Negative Determinations of Suitability. When the Department issues a Report with a finding that a site fails to meet the site suitability criteria or that an application does not contain sufficient data to allow a determination on the criteria, the site assignment process is complete and the board of health shall not hold a public hearing as prescribed in 310 CMR 16.20, provided that an applicant may request the Department to reconsider the findings in the Report and the Report may be reissued.

(2) Positive Determinations of Suitability. When the Department issues a Report with a finding that the site does meet the site suitability criteria, the board of health shall proceed to hold a public hearing pursuant to 310 CMR 16.20 for the purpose of deciding whether to grant or refuse to grant a site assignment for the parcel of property which is the subject of the Department Report.

16.16: Requests for Technical Assistance from the Department

(1) Technical Assistance. The board of health may request advice, guidance, or technical assistance from the Department to assist in the review of the information contained within the application or the Report. Any request for technical assistance shall be in writing. The technical assistance from the Department shall stop on the date of the first scheduled public hearing, except where it will serve to clarify information contained within the Department Report.

(2) Informal Arrangements. After a request for technical assistance, the Department and the board of health may enter into informal arrangements to facilitate the review of the application, provided that the applicant is informed of any such arrangement.

16.17: Application Review by the Department of Public Health

(1) Review and Comments. The Department of Public Health (DPH) shall review the application and comment as to any potential adverse impacts the site may have on public health and safety. Such review and comment shall be made no later than 60 days after the start of the Review Period. The Department of Public Health may submit or discuss its comments with the Department during the Review Period.

(2) Department of Public Health Report. The Department of Public Health at the written request of the board of health shall make or have made a written report containing its comments on the potential adverse impacts of the site on public health and safety and may submit said report no later than 60 days after the start of the Review Period. The DPH may submit such report to the board of health.

(3) Coordination with Board of Health. The DPH shall coordinate and cooperate with the board of health on any matter relating to the report upon written request by the board of health to DPH.

16.18: Waiver

(1) General. The Commissioner may waive any provision or requirement contained in Part I of 310 CMR 16.00, or at 310 CMR 16.21: *Alternative Use of Assigned Site*, not specifically required by law where the Commissioner finds:

(a) that the waiver is necessary to accommodate an overriding community, regional or state public interest; and

(b) the granting of the waiver would not interfere with the ability of the board of health to fulfill its duties; and

(c) the granting of the waiver would not diminish the ability of the general public to review and comment on the proposed project.

(2) Filings. All requests for waivers shall be filed and documented in accordance with 310 CMR 16.08(5)(c).

16.20: Public Hearing Rules

(1) Preamble. "Public Hearings" pursuant to M.G.L. c. 30A are not "Adjudicatory Proceedings" within the meaning of M.G.L. c. 30A, § 1. See M.G.L. c. 30A, § 2. Pursuant to M.G.L. c. 111, § 150A, however, "for the limited purpose of appeal from such public hearings, a local board of health shall be deemed to be a state agency under the provisions of said chapter thirty A and its proceedings and decision shall be deemed to be a final decision in an adjudicatory proceeding". The public hearing process is designed to permit the flexibility and informality appropriate to the board of health proceeding, while providing the board of health with procedural direction and the authority to create a record and render a decision within a limited time period which is amenable to the procedures and the standards of judicial review applicable under M.G.L. c. 30A, § 14.

(2) Applicability. 310 CMR 16.20, governs the conduct of public hearings by a board of health on a Site Assignment Application following the issuance of a Report by the Department finding that a proposed site is a suitable for a specified type(s) of solid waste facility(ies), as required by M.G.L. c. 111, § 150A.

(3) Public Hearing Definitions. The following words when used in 310 CMR 16.20, shall, except as otherwise required by context, have the following meaning:

Abutting Board of Health means a board of health of a municipality located within ½ mile of a boundary of the proposed site.

Applicant means person named in the application as the owner of a property interest in the site and the operator of the proposed facility where the owner has entered into an agreement with an operator at the time the application is filed.

Authorized Representative means individual authorized by a party to represent him in these matters.

Board of Health or (Board) means legally designated health authority of the city, town or other legally constituted governmental unit within the Commonwealth having the usual powers and duties of the board of health of a city or town, or its authorized agent or representative; provided that in any case in which a solid waste management facility extends into the geographic areas of two or more boards of health, said boards may coordinate activities in effecting compliance with 310 CMR 16.00 for the management of solid waste. Unless otherwise explicitly stated, "the board of health" means the board of health of the municipality in which the proposed site is located.

Decision means final decision rendered by the board of health.

Hearing Officer means an individual(s) duly designated by the board of health to conduct the public hearing.

Papers means all written communications filed in the public hearing, including motions and other documents.

Party means the applicant, any abutting board(s) of health and any abutter(s), group of ten citizens or other intervenor duly registered pursuant to 310 CMR 16.20(9)(b).

Person(s) means a private person, firm, or corporation, or any federal, state, or local governmental or other entity which is not an agency.

Subpoena means a document which commands a witness to appear at a given time and give testimony before a court or an administrative proceeding such as a hearing; and may require the witness to produce before the hearing tribunal any documents, papers, or records in his possession or control.

(4) Representation

(a) Appearance. An individual may appear on his own behalf. A duly authorized officer or employee may represent a corporation; an authorized member may represent a partnership or joint venture; and an authorized trustee may represent a trust. Any Party in the public hearing shall have the right to be accompanied, represented and advised by an authorized representative.

(b) Notice of Appearance. An appearance shall be made in the public hearing by filing a written notice with the board of health or Hearing Officer. Such notice shall contain the names, address and telephone number of the authorized representative.

(5) Time

(a) Timely Filing. Papers required or permitted to be filed under 310 CMR 16.20, or any provision of the applicable law must be filed at the board of health office or such other place as the board shall designate within the time limits for such filing as are set by 310 CMR 16.20 or the Hearing Officer. Papers filed in the following manner shall be deemed to be filed as set forth herein:

1. Hand-Delivery during business hours shall be deemed filed on the day delivered.
2. Hand-Delivery during times other than during regular business hours shall be deemed filed on the next regular business day.
3. Mailing in U.S. Mail shall be deemed filed on the date so postmarked.

All papers shall show the date received by the board and the board shall cooperate in giving date receipts to Persons filing papers by hand-delivery.

(b) Notice of Board of Health Actions. Communications concerning public hearings pursuant to 310 CMR 16.00 from the board or the Hearing Officer shall be presumably deemed received upon the day of hand-delivery or if mailed three days after deposit in the U.S. mail.

(c) Computation of Time. Unless otherwise specifically provided by law or 310 CMR 16.20, computation of any time period referred to in 310 CMR 16.20 shall begin with the first day following the act which initiates the running of the time period. The last day of the time period so computed is to be included unless it is a Saturday, Sunday, or legal holiday or any other day on which the office of the board is closed, in which event the period shall run until the end of the next following business day. When the time period is less than six days, intervening days when the board is closed shall be excluded in the computation.

(d) Extension of Time. It shall be within the discretion of the board or Hearing Officer, for good cause shown, to extend any time limit contained in 310 CMR 16.20. All requests for extension of time shall be made by motion before the expiration of the original or previously extended time period. This discretion shall not apply to any limitation of the time prescribed by the Massachusetts General Laws.

(6) Filings Generally
(a) Title. Papers filed with a board shall state the report number, the title of the proceeding, the name of the Person in whose behalf the filing is made and the name of the applicant.
(b) Signatures. Papers filed with a board shall be signed and dated by the Party on whose behalf the filing is made or by the Party's Authorized Representative. This signature constitutes a certification by the signer that he has read the document, knows the content thereof, and that such statements are true, that it is not interposed for delay and that if the document has been signed by an Authorized Representative that he has full power and authority to do so.
(c) Form. Size and printing requirements. All Papers, except those submittals and documents which are kept in a larger format during the ordinary course of a Party's business, shall be hand-printed or typewritten on paper 8 to 8½ inches wide, by 11 inches long. Mimeographed, multigraphed, photoduplicated Papers will be accepted as hand-printed or typewritten. All papers shall be clear and legible.
(d) Copies. The original of all Papers shall be filed together with two copies.
(e) Service. Simultaneously with all filings of any and all Papers with the board, the Party filing such Papers shall send a copy thereof to all other Parties to the proceedings, by delivery in hand, or by United States mail, postage prepaid, properly addressed. All papers filed with the board shall be accompanied by a statement signed under the pains and penalty of perjury that copies have been sent, specifying the mode of service date, the Party to whom sent, the Party's address, and address of service. Failure to comply with this rule shall be grounds for refusal by the board to accept Papers for filing.

Any Party may request a waiver of the requirement of 310 CMR 16.20(6)(e). The Hearing Officer may grant the request if significant expense or waste of resources would be avoided and if adequate arrangements can be made for access to the Papers by all persons who would otherwise be entitled to service of a copy.

(7) Initiation of Hearings.
(a) Commencement. The board shall commence a public hearing pursuant to 310 CMR 16.40 within 30 days of receipt of the Department's Report On Suitability (Report).
(b) Public Notice. At least 21 days prior to commencement of the public hearing the board shall notify all parties identified at 310 CMR 16.08(2) of the hearing, by certified mail, and cause notice of the public hearing to be published. Such notice shall be published in daily or, if not possible, weekly newspapers of general circulation in the municipality. Where the municipality has a population of greater than 15% of residents that do not speak English as their primary language, the board of health shall publish an additional notice in a daily or weekly newspaper(s) circulated in that community written in the primary language(s) of those residents.
(c) Form and Content. The notice shall give the date, time and location of the public hearing, a description of the proposed facility including the type of facility, proposed disposal tonnage, proposed hours of operation, the identity and mailing address of the applicant; the public location within the community and hours where the application may be inspected; the time period for written comment on the application to the board and the address to which comments should be mailed. In addition the notice shall contain the following statement: "The Department of Environmental Protection has issued a Report in which it determines that the above described place is a suitable place for the proposed facility. Copies of the Department's Report On Suitability and the site suitability criteria (310 CMR 16.00) are available for copying and examination along with the application."

(8) Examination of Record Below; Discovery
(a) Availability of the Record. The Report, the application, and all comments received by the Department on the application are public records and shall be made available by the board for inspection and copying by any person during reasonable business hours. The board may charge reasonable copying fees for any of the documents comprising the record below. There shall be no additional discovery.
(b) Prefiled Direct Testimony. The Hearing Officer may, on his/her own motion, order all Parties to file within a reasonable time in advance of the public hearing full written text of the testimony of their witnesses on direct examination on issues pertinent to site assignment, including all exhibits to be offered into evidence, or on issues specified by the Hearing Officer. Such testimony shall be filed by or before a time specified by the Hearing Officer and shall be available to examination and copying as provided in 310 CMR 16.20(8)(a). The Hearing Officer may also require the filing of written rebuttal testimony within a reasonable time after the filing of the direct testimony described in the preceding sentence. All testimony filed pursuant to this rule shall be subject to the penalties of perjury. All witnesses whose testimony is filed pursuant to this rule shall appear at the hearing on the merits and be available for further examination or cross-examination at the discretion of the Hearing Officer. If a witness is not available for further examination or cross examination at the hearing on the merits, the written testimony of the witness shall be excluded from the record unless the Parties agree otherwise.

(9) Intervention and Participation.
(a) Intervention. Any Person who with good cause wishes to intervene in a public hearing shall file a written request (petition) for leave to intervene. Persons whom the Hearing Officer determines are specifically and substantively affected by the hearing shall be allowed to intervene. For the purpose of the Public Hearing the following persons shall be considered to be specifically and substantively affected by the hearing and shall be eligible to register as a Party to the hearing:
1. Abutters. Any abutter or group of abutters to the proposed facility shall be a Party to the hearing by timely submission of a Party Registration Statement in accordance with 310 CMR 16.20(9)(b).
2. Ten Citizens Groups. Any group of ten or more persons may Register collectively as a Party to the public hearing in which damage to the environment, as defined in M.G.L. c. 214, § 7A, or public health and safety are or might be at issue; provided, however, that such intervention shall be limited to the issues of impacts to public health, safety and damage to the environment and the elimination or reduction thereof in order that any decision in the public hearing shall include the disposition of such issue.
(b) Registration. The registration of an abutter, group of abutters or ten citizen groups as a Party or the petition of a person to be an intervenor to the public hearing shall be valid only if submitted prior to the commencement of the hearing. The registration statement shall be signed under pains and penalty of perjury and contain the following information:
1. name and address of the registrant(s);
2. proposed party status (abutter, group of abutters, ten citizen group or intervenor);
3. identity of the Authorized Representative, if any;
4. for individuals wishing to register as an abutter a description of the abutting property including its boundaries and current use and a statement that the registrant is the owner of the parcel; and
5. for individuals or groups of individuals petitioning to be an intervenor a statement indicating how they will be substantially and specifically affected by the proposed facility.
If no Authorized Representative is identified in the Registration Statement the first person mentioned in the Statement as a member of the group shall be deemed the Authorized Representative of the group. Said Authorized Representative shall have the

sole authority to sign submissions by the group. A group that registers as a Party shall be collectively deemed a Party and shall have the rights of participation of a Party as set forth in 310 CMR 16.20, except as limited by 310 CMR 16.20(9).

(c) Rights of Intervenors. Any person permitted to intervene shall have all rights of, and be subject to, all limitations imposed upon a Party, however, the Hearing Officer may exclude repetitive or irrelevant material. Every Petition to intervene shall be treated as a petition in the alternative to participate.

(d) Rights of Participants

1. Any person specifically affected by a proceeding shall be permitted to participate. Permission to participate shall be limited to the right to present testimony, to argue orally at the close of the public hearing and to file a brief. Permission to participate, unless otherwise stated, shall not be deemed to constitute an expression that the person allowed to participate is a party in interest who may be aggrieved by any final decision.

2. Participants shall not be required to submit to cross examination except upon the determination of the Hearing Officer that cross examination is necessary in the interest of a full and fair hearing and an adequate record. Such cross examination of participants shall be conducted through the Hearing Officer. Failure of a Participant to submit to cross examination allowed by the Hearing Officer shall be grounds to strike the Participant's statements.

(10) Conduct of Public Hearing.

(a) Public Hearings, Where Held. Hearings shall be held at a public meeting hall, appropriately sized to accommodate all Parties and the number of persons reasonably anticipated to attend in the city or town where the site is located. The public hearing shall continue until it is closed by the Hearing Officer. Arrangements by the board to provide a place for such public meeting shall anticipate that the public hearing may extend for several days.

(b) General. Hearings shall be as informal as may be reasonable and appropriate under the circumstances. The applicant shall be the party to first proceed to introduce evidence and testimony except as ordered by the Hearing Officer.

(c) Decorum. All Parties, Authorized Representatives, witnesses and other persons present at the public hearing shall conduct themselves in a manner so as not to obstruct or delay the orderly presentation of evidence and issues. Where such decorum is not observed, the Hearing Officer may take appropriate action.

(d) Hearing Officer. The Hearing Officer shall define issues, receive and consider relevant and reliable evidence and exclude irrelevant evidence, ensure an orderly presentation of the evidence and issues, and aid the board in reaching a decision based on the evidence presented at the hearing and in accordance with the standards set forth in M.G.L. c. 111, § 150A.

(e) Rights of Parties. All Parties shall have the right to present evidence, cross-examine, make objections and make oral arguments. Cross-examination shall occur immediately after any witness' testimony has been received. Whenever appropriate, the Hearing Officer may permit redirect and recross.

(f) Evidence and Testimony

1. A witness' testimony shall be under oath or affirmation.

2. All evidence and testimony, materials and legal rules on which a decision is to be based must be entered into the Record of the public hearing, unless excluded pursuant to 310 CMR 16.20(8)(b), or (10)(f)3.

3. Witnesses giving testimony shall be available for such further examination or cross examination as is determined to be appropriate by the Hearing Officer. Failure of a witness to be so available may be grounds to strike any other testimony given by such witness from the record at the sole discretion of the Hearing Officer. The Hearing Officer may limit or exclude unduly repetitious or irrelevant evidence. The Report and the Department Record shall not constitute testimony for the purposes of 310 CMR 16.20

4. All documents and other evidence offered in evidence shall be open to

examination by the Parties.

5. All evidence including any records, investigative reports, documents and stipulations which are to be relied upon in making a decision must be offered and made a part of the Record. Documentary evidence may be in the form of copies or excerpts, or by incorporation by reference.

(g) Administrative Notice. The Hearing Officer or the board of health may take notice of any fact which may be judicially noticed by the courts, and in addition may take notice of general, technical or scientific facts within their specialized knowledge. Parties shall be notified of the material so noticed, and they shall be afforded an opportunity to contest the facts so noticed. The board may utilize their experience, technical competence and specialized knowledge in the evaluation of the evidence presented to them.

(h) Subpoenas. No subpoenas may be issued or enforced requiring the attendance and testimony of a witness or the production of documents at the public hearing.

(i) Transcript of Proceedings. Testimony and argument at the hearing shall be either recorded electronically or stenographically. Transcripts of the proceedings shall be supplied to any Party, upon request, at his own expense. Any Party, upon motion, may order a stenographer to transcribe the proceedings, at his own expense. In such event, a stenographic record shall be provided to the board or Hearing Officer at no expense to the board, and upon such other terms as the board or Hearing Officer shall order.

(j) Contents of Record. The record of the proceedings shall include the Department's Report On Suitability and accompanying Record, the Department of Public Health report, if any, and shall in addition, consist of the following items appropriate to the hearing: pleadings, prehearing conference memoranda, magnetic tapes, orders, briefs, and memoranda, transcripts, exhibits and other papers or documents which the Hearing Officer has specifically designated be made part of the record.

(k) Decision.

1. Time of Decision. The board shall render its decision within 45 days of the initial date of the public hearing.

2. Standard of Decision. A board shall determine that a site is suitable for assignment as a site for a new or expanded solid waste facility unless it makes a finding, supported by the record of the hearing, that the siting thereof would constitute a danger to the public health, safety or environment, based on the siting criteria set forth and established under 310 CMR 16.40.

3. Tentative Decisions. Tentative decisions shall not be issued as a matter of routine, but shall be issued only if a Party requests a tentative decision either in writing or orally on the record, prior to the close of the hearing on the merits; or if the board determines that a tentative decision should be issued in the interest of justice. Every tentative decision shall be in writing and shall be signed by a majority of those officials of the board who rendered the decision. Every tentative decision shall contain a statement of the reasons therefor, including a determination of fact pertaining to each of the site suitability criteria listed in 310 CMR 16.40 or law necessary to the decision. If the majority of the board who must sign the final decision have personally heard or read the evidence, the board shall not be required to comply with a request to issue a tentative decision.

4. Final Decision. Every final decision shall be in writing and shall be signed by a majority of those officials of the board who rendered the decision. Every final decision shall contain a statement of the reasons therefore, including a determination of fact pertaining to each of the site suitability criteria listed in 310 CMR 16.40 or law necessary to the decision, provided that if a final decision was preceded by a tentative decision, the final decisions may incorporate by reference those determinations set forth in the tentative decision, subject to such modifications and discussion as the Hearing Officer or board may deem appropriate to respond to timely filed opposing and concurring views with the tentative decision.

(11) Selection and Qualification of Hearing Officer

(a) The Hearing Officer shall be selected by majority vote of the board of health.
(b) The person selected to be the Hearing Officer shall be impartial and have the requisite qualifications to properly perform the duties and responsibilities of a Hearing Officer. Except as agreed to by the parties and a majority of the board of health, no person shall be a Hearing Officer who:

1. is related to any board member, abutting board of health member, party, abutter, or applicant;
2. is a current or former employee or agent of the applicant or of the municipality where the proposed site is located or a municipality of an abutting board of health prior to selection as Hearing Officer. Notwithstanding the aforesaid, a person who has previously served as a Hearing Officer is not excluded from subsequent service as a Hearing Officer;
3. has a personal financial interest or at the time of selection or at any time during the proceedings be employed by any person having a financial interest in the board's decision on site suitability; or
4. does not have experience by training or practice in conducting administrative or judicial proceeding's.

(c) Duties. The Hearing Officer's duties shall include:

1. opening and closing the hearing;
2. establishing the order of the proceedings;
3. ensuring that only reliable and relevant testimony is introduced;
4. assisting all those giving testimony to make a full and free statement of the facts in order to bring all information necessary to determine whether a site is suitable or not suitable;
5. ensuring that all Parties have an opportunity to present their claims orally or in writing and to present witnesses and evidence relevant to the suitability or non-suitability of the site;
6. ensuring that participants have an opportunity to present evidence, whether orally or in writing, relevant to the suitability or non-suitability of a site;
7. introducing into the record any regulations, statutes, memoranda or other materials he believes relevant to the issues at the proceeding;
8. receiving, ruling on, limiting or excluding evidence pursuant to 310 CMR 16.20(10)(f); and
9. establishing a date and time following the close of hearing until which time written evidence will be received, considered and made part of the record.

Where procedural issues arise regarding the conduct of the hearing which are not governed by 310 CMR 16.20 the Hearing Officer may rely on 801 CMR 1.00: *Standard Adjudicatory Rules of Practice and Procedure*, to resolve such issues.

(d) Powers. The Hearing Officer's powers shall include the authority to:

1. request a statement of the issue or issues and define the relevant issues;
2. regulate the presentation of the evidence and the participation of the Parties or their representatives, or the participation of other Persons, for the purpose of ensuring an adequate and comprehensible record of the proceedings. To this end the Hearing Officer may conduct his own examination of witnesses, may require that all examination or cross examination of witnesses be directed through the Hearing Officer, through some other person, or by any other means or method of examination or cross examination of witnesses as he determines is appropriate to ensure full examination of the issues; and
3. regulate the presentation of the evidence and the participation of the Parties or their representative or the participation of other Persons for the purpose of ensuring that the public hearing is concluded in a timely manner to allow the board to render a written decision within 45 days of the commencement date of the public hearing. To this end the Hearing Officer shall impose such time restrictions and limitations on oral presentations as he deems appropriate.

(12) Imposition of Conditions The board may include in any decision to grant a site assignment such limitations with respect to the extent, character and nature of the facility or expansion thereof, as may be necessary to ensure that the facility or expansion thereof will not present a threat to the public health, safety or the environment.

(13) Notice of Decision.
(a) Incorporation into the Record. Upon its issuance, the decision shall be incorporated into the Record and made available for inspection and copying as set forth in 310 CMR 16.20(8)(a).
(b) Time of Notice. Within seven days of issuance of its decision the board shall publish notice of its decision in the same manner as set forth in 310 CMR 16.20(7)(b).
(c) Content of Notice. The nature of decision shall identify the applicant, briefly describe the proposed facility, including its location, and set forth the board determination. The notice shall include the following provision: "Any person aggrieved by the decision of the board of health may, within 30 days of publication of this Notice of Decision appeal under the provisions of M.G.L. c. 30A, § 14."

16.21: Alternative Use of Assigned Site

(1) Site Assignment. Where a site has been assigned as a dumping ground or a refuse disposal incinerator pursuant to St. 1955, c.310, § 2, a different solid waste activity shall not be conducted at the site except in accordance with a new or modified site assignment established in accordance with 310 CMR 16.00, except as provided at 310 CMR 16.21(3)(a).

(2) General Use Site Assignment. Where a site assignment does not contain a condition limiting its use to a particular method of solid waste management, a new or modified site assignment is not required to obtain a permit for any solid waste management activity at the site.

(3) Specific Use Site Assignment. Where a site is assigned for a specific solid waste purpose, a different solid waste activity shall not be conducted at the site except in accordance with a new or modified site assignment, except as allowed at 310 CMR 16.21(3)(a) or (b):
(a) Recycling, Composting or Other Processing. Recycling or composting may be approved at any assigned, permitted active disposal or handling facility without requiring a new or modified site assignment when such activity is integrated into the assigned solid waste management operation and the tonnage limits, if any, for recycling or composting are not exceeded. After the solid waste facility ceases operation the recycling or composting of solid waste shall not be permitted at the site except in accordance with 310 CMR 16.21(3)(b) and the processing of recyclable or compostable material shall not be permitted except in accordance with a Department approval for post-closure use of the site.
(b) Handling Facility at a Closed or Inactive Landfill or Combustion Facility Site. A site which has been assigned for use as a landfill or combustion facility which has been closed or is in the process of imminently closing shall not require a new or modified site assignment to obtain an approval for the storage, transfer or processing of solid waste when:
1. the facility does not receive solid waste in excess of the tonnage limits stated in the site assignment for landfilling, or combustion or processing;
2. the outstanding site assignment does not contain a condition which directly or indirectly prohibits the handling activity or establishes a date for the termination of all solid waste activities at the site which is shorter than the anticipated useful life of the handling facility; and
3. the site meets the suitability criteria at 310 CMR 16.40(3)(d), unless a waiver

of one or more criteria has been granted pursuant to 310 16.40(6).

16.22: Modifications to and Rescissions and Suspensions of Site Assignments

(1) Modifications to Site Assignments Due to a Threat to Public Health, Safety or the Environment. In accordance with M.G.L. c.111, §150A, the assigning board of health, or the Department, may at any time rescind, suspend or modify a site assignment upon a determination that the operation or maintenance of a facility results in a threat to public health, safety or the environment after due notice and public hearing. The public hearing must satisfy the requirements of M.G.L. c.30A, §11.

(2) Major Modifications to Site Assignments at the Request of the Facility Owner or Operator. Modifications deemed to be "Major Modifications" include: modifications required to Expand a Site; vertical expansions beyond the limits of an approved plan; modifications as specified at 310 CMR 16.21(1) and 16.21(3), Alternative Use of An Assigned Site; or any request to waive any site assignment criterion set forth at 310 CMR 16.40(3) as it applies to the existing facility. A major modification shall require submittal of a new site assignment application that addresses all criteria affected by the modification, as determined by the Department in writing, and shall be reviewed in accordance with the requirements established at 310 CMR 16.08 through 16.20.

(3) Minor Modifications to Site Assignments at the Request of the Facility Owner or Operator. Any request to modify a site assignment that is not subject to 310 CMR 16.22(1) or (2), including any request to modify conditions established by the Board of Health in the site assignment, or to increase daily or annual tonnage limits, except as specified at 310 CMR 16.22(4) below, are deemed to be "Minor Modifications." The Board of Health may modify a site assignment to address a minor modification, at the request of the facility owner or operator, without requiring the filing of a new application by the applicant or site suitability report by the Department, provided the Board of Health provides public notice and holds a public hearing in accordance with the requirements of 310 CMR 16.00 prior to deciding on the minor modification.

(4) Reserve Capacity Approvals. Notwithstanding 310 CMR 16.22(3), any facility may request, in writing to the Department, a temporary increase in the daily or annual tonnage limits to address a short-term emergency situation, as determined by the Department, without the requirement for a minor modification of the site assignment.

(5) MEPA Review. Any modifications to the site assignment may require the filing of a Notice of Project Change pursuant to 310 CMR 11.10, MEPA Regulations. Should a Notice of Project Change be required the applicant shall comply with 310 CMR 16.08(5)(d) prior to submitting a new site assignment application.

16.30: Fees

(1) Application Fees

(a) General. The Application Fee is a fee which is paid by an applicant to the board of health. The board of health may use the fee for eligible costs of reviewing technical data, obtaining technical assistance and conducting a public hearing. The Application Fee shall be assessed as two separate fees:
1. Technical Fee; and
2. Public Hearing Fee.

(b) Excess Fees. The board of health shall return to the applicant any of the Application Fee in excess of the actual expenditures for allowable costs following the completion of the site assignment process.

(c) Alternative Systems. The board of health may establish, in lieu of part or all of 310 CMR 16.30, another system for the assessment and payment of an Application Fee provided such system is agreed to by the applicant.
(d) Nothing in 310 CMR 16.30 creates or modifies any rights of boards of health relative to the assessment or collection of fees under applicable statutes, by-laws, or ordinances governing municipal finance.

(2) Technical Fee.

(a) General. The Technical Fee may be used by the board of health to cover the cost of conducting a review of technical data and/or to cover a portion of the cost of other technical assistance.
(b) Assessment of Fee.
1. Assessment. The board of health, upon the receipt of an application, may assess by a written notice to the applicant a Technical Fee for said application not to exceed the maximum amount set forth in 310 CMR 16.99.
2. Form of Payment. The board shall prescribe the amount of the fee and the manner of payment in writing to the applicant within ten days of the filing of the application in accordance with 310 CMR 16.08.
3. Payment. The applicant shall pay the Technical Fee in the amount and manner prescribed by the
4. Waiver. The board of health may waive all or a portion of the Technical Fee. Any such waiver shall be made in writing to the applicant.
5. Absence of assessment or waiver. In the absence of an assessment or waiver of the Technical Fee by the board of health in accordance with 310 CMR 16.30(2)(b)1., 2. or 4., the applicant may satisfy the Technical Fee payment requirements by making a payment in the form of a certified or bank check or money order, in an amount equal to the maximum Technical Fee for the appropriate facility as specified in 310 CMR 16.99.
(c) Technical Review
1. General. The Technical Fee may be expended for 100% of the allowable cost of reviewing technical data submitted to the board of health.
2. Allowable costs. Allowable costs for technical review include the cost of hiring consultants and related technical experts to assist the board of health in reviewing the application, the Department Report on Suitability, the Department of Public Health's Report and comments, public comments and any subsequent amendments or additions to the application.
3. Allowable tasks. Allowable tasks for the consultants and related technical experts include:
a. determining completeness and accuracy of data in the application;
b. determining whether the correct analytical techniques were used, whether valid data were obtained, and whether the data support the proposed conclusions;
c. determining what other data should be obtained, the means to obtain it and its potential significance;
d. examining municipal, Department and other relevant records and consulting with Department staff;
e. visiting the site to make a visual inspection;
f. preparing and submitting comments to the Department on technical issues relating to the site and the site suitability criteria;
g. reviewing the Department Report on Suitability and other data submitted prior to and during the hearing; and
h. preparing a written report of comments and determinations.
4. Excluded Costs. Allowable costs for technical review shall not include the cost of conducting site, environmental or population sampling and analyses, otherwise generating new data, or performing independent analyses of environmental health impacts. These costs may qualify as allowable costs for technical assistance in accordance with 310 CMR 16.30(d) 2.

(d) Technical Assistance
1. General. The Technical Fee may cover 50% of the cost of providing expert legal, scientific or engineering assistance to the board of health to assure that all points of view are adequately presented and evaluated at the public hearing.
2. Allowable costs. Allowable costs for technical assistance include the cost of hiring consultants, technical experts or legal counsel. Allowable types of technical assistance include:
a. legal counsel to represent the board of health at the hearing and to examine witnesses at the hearing;
b. scientific and/or engineering experts to help develop evidence, question witnesses and/or testify at the hearing; and
c. photographic or graphic expertise.
(e) Extraordinary Expenses
1. Assessment. After commencement of the public hearing, pursuant to the requirements of 310 CMR 16.20, the board of health may assess in writing, an additional Technical Fee payment when the following conditions are satisfied:
a. the evidence proposed to be obtained by the expenditure of the fee is likely to be critical to the determination of site suitability; and
b. the applicant has failed to provide such evidence upon request by the Hearing Officer; and
c. the evidence cannot be acquired without the expenditure by the board of health of funds in excess of the Technical Fee; and
d. the evidence did not exist or was not reasonably discoverable through due diligence by the board of health prior to the request; or
e. the evidence is based on new scientific or technical standards or criteria which were previously unavailable.
2. Payment or Appeal. The applicant upon receipt of the written request may:
a. within three days appeal to the Hearing Officer for a determination as to the appropriateness and reasonableness of the fee assessment; or b. make the appropriate payment as prescribed by the board of health within ten days.
3. Hearing Officer's Decision on Appeals.
a. Standard of Decision. The Hearing Officer shall determine that an extraordinary expense request is reasonable only if she or he finds that the conditions in 16.30(2)(e)1. are satisfied.
b. Decision by the Hearing Officer. The Hearing Officer shall issue a written determination to the applicant and the board of health. When the Hearing Officer determines the assessment is reasonable the applicant shall make the appropriate payment as directed by the board of health within six days. When the Hearing Officer determines the assessment is not reasonable the applicant shall not be required to make the payment.
4. Non-payment. The board of health may withhold final disposition of the site assignment application until the applicant submits the payment or issue a determination based on the available information.

(3) Public Hearing Fee.

(a) General. The board of health may use the Public Hearing Fee to cover the cost of conducting a public hearing that meets the requirements of 310 CMR 16.20.
(b) Assessment and Payment of the Public Hearing Fee. The board of health, upon the receipt of a Department Report on suitability that contains a finding that a site is suitable, may assess a Public Hearing Fee.
1. Initial Public Hearing Fee Assessment.
a. Assessment. The board of health shall prescribe to the applicant in writing the amount and manner of payment of the initial public hearing fee assessment.
b. Maximum Amount. The maximum amount of the initial assessment shall be 50% of the maximum allowable Technical Fee for the appropriate size and type of facility, as set in 310 CMR 16.99.
c. Payment. The applicant shall pay the initial public hearing fee assessment as prescribed

by the board of health within 15 days of receipt of the written request from the board.
2. Additional Public Hearing Fee Assessments.
a. General. In the event that the initial Public Hearing Fee assessment is insufficient to cover the allowable costs described in 310 CMR 16.30(3)(d) the board of health may require additional Public Hearing Fee payments.
b. Assessment. The board of health shall prescribe to the applicant, in writing, the amount and manner of payment of the additional public hearing fee assessments.
c. Payment. The applicant shall pay the additional assessment within six days of receipt of the written request from the board of health.
3. Fee Waiver. The board of health may waive all or a portion of the Public Hearing Fee.
(c) Non-payment of Fees
1. Suspension of Hearings. In the event that any fee assessment is not paid as required, the board of health may suspend the public hearing, or, in the case of the initial payment, delay the opening of the public hearing.
2. Resumption of Hearings. Any hearing delayed or suspended because of non-payment of fees shall be commenced or resumed within seven days of receipt of payment or resolution of a fee dispute in accordance with 310 CMR 16.30(6).
3. Exception. When the applicant is the municipality itself or an agency thereof, the public hearing shall not be delayed or suspended because of non-payment of any public hearing fee assessment.
(d) Allowable Costs. The only allowable costs that may be paid from the Public Hearing Fee are:
1. the cost of any notice required under 310 CMR 16.20;
2. the cost of recording, through a stenographic record, tape recording, or other means as determined by the Hearing Officer the record of the proceedings;
3. the cost of having a Hearing Officer perform the duties set forth in 310 CMR 16.20;
4. the cost of producing any copies required under 310 CMR 16.20; and
5. the cost of renting a hall, chairs and/or public address system when the municipality has no such facilities or equipment which are adequate for the purpose of the public hearing.

Transcription of the proceedings shall not be paid for from the Hearing Fee except by order of the Hearing Officer prior to a final decision on site assignment by the board of health. The cost of transcribing or otherwise preparing an official transcript for appeal shall not be paid by the Public Hearing Fee.

(4) Expenditure of the Application Fee

(a) General. All expenditures of the Application Fee shall be reasonable. The amount paid for any service shall not exceed the usual and customary amount for such service.
(b) Obligation of Funds. The board of health shall not spend or enter into obligations to spend any or all of the Technical Fee without a scope of work. The scope of work shall detail proposed contractor's services and include cost estimates for each service and describe whether the proposed service is for technical review or technical assistance.
(c) Record Keeping. The board of health shall make and retain or require all persons paid from the Application Fee to make and retain written records which set forth:
1. a description of each of the services performed and work products developed; and
2. the amount expended for each such service or work product.
(d) Production of Records. The board of health, upon written request from the applicant, the Hearing Officer or the Department, shall provide or cause their contractor to provide, within a reasonable time not to exceed 14 days, a copy of said records.
(e) Cessation of Expenditures. The board of health shall not spend any additional amount of the Application Fee and shall make reasonable efforts to halt all work on any activities that would be covered by the Application Fee, when the board of health receives either:
1. a Department Report on Suitability that finds a site not suitable; or
2. a notice from the applicant withdrawing the application from consideration.

(5) Reimbursement of Unexpended Fees

(a) Request for Reimbursement. After a final decision on the application or upon the withdrawal of an application, the applicant may submit a written request to the board of health to provide a final accounting of all funds expended or owed from the Application Fee and to return all unexpended and uncommitted funds. For the purpose of 310 CMR 16.30, a final decision shall be either:
1. the Department Report on Suitability finding a site to be not suitable; or
2. a determination by the board of health to assign a site or to refuse to assign a site after a public hearing.
(b) Accounting. The board of health shall provide a full accounting of all expenditures within 45 days of receipt of the request.
(c) Reimbursement. The board of health shall return the unencumbered funds within a reasonable time period.

(6) Fee Disputes

(a) The board of health shall expend and, if applicable, reimburse to the applicant all fees in accordance with the requirements of 310 CMR 16.30.
(b) Any claims by the applicant against the board of health for improper disposition of fees shall be adjudicated in a court of competent jurisdiction or, if mutually agreed upon by the parties, by arbitration or mediation.

Preamble

310 CMR 16.40 establishes the criteria and decision making process the Department shall utilize in determining whether a site is suitable for a proposed solid waste management facility and upon which boards of health shall base a determination to grant or refuse to grant a site assignment.

16.40: Site Suitability Criteria

(1) Determination of Suitability.
(a) Department's Determination. The Department shall determine whether a site for a new or expanded facility of the type and scope proposed is suitable or not suitable based upon the criteria set forth in 310 CMR 16.40(3), (4) and (5). In reviewing these criteria, no site shall be deemed to be suitable where the impacts from the solid waste management facility will by itself, or in combination with impacts from other sources within the affected area, constitute a danger to public health or safety or the environment. In determining whether or not a proposed facility meets the criteria set forth in 310 CMR 16.40(3), (4) and (5):
1. the Department shall rely upon the application and information supplied by the applicant or any other information made available to the Department;
2. the applicant bears the burden of showing that the proposed facility meets the criteria set forth in 310 CMR 16.40(3), (4) and (5).
3. if the Department determines that the facility is located within a Restricted Area, the applicant shall receive a negative Site Suitability Report;
4. if the Department determines that the facility is not located within a Restricted Area, the Department shall evaluate the criteria set forth in 16.40(3), (4) and (5), using such existing state and federal standards, criteria, guidelines or allowable limits and technical health reports which are intended to protect the public health, safety, and the environment;
5. the Department shall consider whether the site is in a preferred municipality as defined herein; and
6. the Department shall consider whether the site use promotes integrated solid waste management in accordance with 310 CMR 16.40(5).

(b) Site Assignment by Boards of Health. The board of health shall assign a place requested by an applicant as a site for a new facility or the expansion of an existing facility which has received a positive site suitability report from the Department unless it makes a finding that the siting thereof would constitute a danger to public health, safety, or the environment. The finding shall be supported by the record of evidence and shall be based upon the relevant criteria set forth at 310 CMR 16.40(3), (4) and (5). The board of health shall not impose any condition pertaining to facility design except in accordance with conditions placed by the Department pursuant to 310 CMR 16.40(1)(c) 3.

(c) Facility Design Review.

1. General. All applications shall be evaluated with the presumption that the proposed facility shall be designed and constructed to meet all relevant state and federal statutory, regulatory and policy requirements.
2. Design Considerations. The review of an application shall not consider detailed facility designs or operations except where:
   a. the Department determines that specific design or operation plans or data are necessary to determine whether potential discharges or emissions from the proposed facility could render the site not suitable and requires the applicant to submit such relevant and detailed information; or
   b. the applicant intends to alter the site or design the facility to meet specific site suitability criteria and submits such plans or other information as the Department deems necessary to determine if the criteria are satisfied.
3. Design Conditions. When facility design or operation plans are submitted the Department may base a site suitability determination on:
   a. the incorporation of specific facility design elements; or
   b. compliance with performance and technical standards and criteria.

(2) Application of the Site Suitability Criteria. Facility specific site suitability criteria are set forth in 310 CMR 16.40(3) for each of the following types of solid waste management facilities:

(a) landfill facilities;
(b) single waste landfills (Reserved)
(c) solid waste combustion facilities; and
(d) solid waste handling facilities.

Generally applicable criteria are set forth in 310 CMR 16.40(4) and apply equally to all types of solid waste management facilities.

(3) Facility Specific Site Suitability Criteria.

(a) Criteria for Landfill Facilities (restricted areas). No site shall be determined to be suitable or be assigned as a landfill facility where:

1. any area of waste deposition would be within a Zone II area of an existing public water supply well;
2. any area of waste deposition would be within the Interim Wellhead Protection Area (IWPA) of an existing public water supply provided that the proponent may conduct a preliminary Zone II study, approved of by the Department, to determine if the facility would be beyond the Zone II of the public water supply well in question;
3. any area of waste deposition would be within a Zone II or Interim Wellhead Protection Area (IWPA) of a proposed drinking water source area, provided that the documentation necessary to obtain a source approval has been submitted prior to the earlier of either the site assignment application, or if the MEPA process does apply, the Secretary's Certificate on the Environmental Notification Form or Notice of Project Change, or where applicable, the Secretary's Certificate on the EIR or Final EIR;
4. any area of waste deposition would be within 15,000 feet upgradient of the existing public water supply well or proposed drinking water source area for which a Zone II has not been calculated; the proponent may conduct a preliminary Zone II

study, approved of by the Department, to determine if the facility would be beyond the Zone II of the public water supply well or proposed drinking water source area in question;

5. it is determined by the Department that a discharge from the facility would pose a danger to an existing or proposed drinking water source area;

6. any area of waste deposition would be over the recharge area of a Sole Source Aquifer, unless all of the following criteria are met:

a. there are no existing or potential public water supplies downgradient of the site;

b. there are no existing or potential private water supplies downgradient of the site; however, the applicant may have the option of providing an alternative public water supply to replace all the existing or potential downgradient private groundwater supplies; and

c. there exists a sufficient existing public water supply or proposed drinking water source area to meet the municipality's projected needs;

7. any area of waste deposition is within the zone of contribution of an existing public water supply or proposed drinking water source area, or the recharge area of a surface drinking water supply, pursuant to a municipal ordinance or by-law enacted in accordance with M.G.L. c. 40A, § 9;

8. any area of waste deposition would be within the Zone A or Zone B of a surface drinking water supply;

9. any area of waste deposition would be less than 400 feet upgradient, as defined by groundwater flow or surface water drainage, of a perennial water course that drains to a surface drinking water supply which is within one mile of the waste deposition area;

10. any area of waste deposition would be within a Potentially Productive Aquifer, unless:

a. the proponent demonstrates to the Department's satisfaction, based on hydrogeological studies, that the designation of the area as a Potentially Productive Aquifer is incorrect;

b. the proponent demonstrates to the Department's satisfaction, based on hydrogeological studies, that the aquifer cannot now, nor in the reasonably foreseeable future, be used as a public water supply due to existing contamination of the aquifer; or

c. the area has been excluded pursuant as a "Non-Potential Drinking Water Source Area" pursuant to 310 CMR 40.0932, or as otherwise defined at 310 CMR 40.0006: *The Massachusetts Contingency Plan.*

11. any area of waste deposition would be within 1000 feet upgradient , and where not upgradient, within 500 feet, of a private water supply well existing or established as a potential supply at the time of submittal of the application; provided however, the applicant may show a valid option to purchase the restricted area, including the well and a guarantee not to use the well as a drinking supply, the exercise of which shall be a condition of any site assignment;

12. the maximum high groundwater table is within four feet of the ground surface in areas where waste deposition is to occur or, where a liner is designed to the satisfaction of the Department, within four feet of the bottom of the lower-most liner;

13. the outermost limits of waste deposition or leachate containment structures would be within a resource area protected by the Wetlands Protection Act, M.G.L. c. 131, § 40, including the 100 year floodplain;

14. any area of waste deposition or the leachate containment structures would be less than 400 feet to a lake, or 200 feet to a Riverfront Area as defined in 310 CMR 10.00, that is not a drinking water supply;

15. any area of waste deposition would be within 1000 feet of an occupied residential dwelling, health care facility, prison, elementary school, middle school or high school or children's pre-school, licensed day care center, senior center or youth center, excluding equipment storage or maintenance structures; provided,

however, that the applicant may show a valid option to purchase the restricted area, the exercise of which shall be a condition of any site assignment; or

16. waste deposition on the site would result in a threat of an adverse impact to groundwater through the discharge of leachate, unless it is demonstrated to the satisfaction of the Department that a groundwater protection system will be incorporated to prevent such threat.

(b) Criteria for Single Waste Landfills (Reserved)

(c) Criteria for Solid Waste Combustion Facilities. No site shall be determined to be suitable or be assigned as a solid waste combustion facility where:

1. the waste handling area would be within the Zone I of a public water supply;

2. the waste handling area would be within the Interim Wellhead Protection Area (IWPA) or Zone II of an existing public water supply, or within a proposed drinking water source area, provided that the documentation necessary to obtain a source approval has been submitted prior to the earlier of either the site assignment application, or if the MEPA process does apply, the Secretary's Certificate on the Environmental Notification Form or Notice of Project Change, or where applicable, the Secretary's Certificate on the EIR or Final EIR, unless restrictions are imposed to minimize the risk of an adverse impact to the groundwater; and either

   a. the proponent can demonstrate to the satisfaction of the Department that the facility cannot reasonably be sited outside the IWPA or Zone II; or

   b. there would be a net environmental benefit to the groundwater by siting the facility within the Zone II or the IWPA where the site has been previously used for solid waste management activities.

3. the waste handling area would be within the Zone A of a surface drinking water supply;

4. the waste handling area would be within 500 feet upgradient, and where not upgradient, within 250 feet, of an existing or potential private water supply well existing or established as a Potential Private Water Supply at the time the application was submitted; provided however, the applicant may show a valid option to purchase the restricted area including the well and a guarantee not to use the well as a drinking water source, the exercise of which shall be a condition of any site assignment.

5. the maximum high groundwater table is within two feet of the ground surface in areas where waste handling is to occur unless it is demonstrated that a two foot separation can be designed to the satisfaction of the Department;

6. the waste handling area would be within 500 feet of an occupied residential dwelling, prison, health care facility, elementary school, middle school or high school, or children's preschool, excluding equipment storage or maintenance structures, licensed day care center, senior center or youth center; provided, however, that the applicant may show a valid option to purchase the restricted area, the exercise of which shall be a condition of any site assignment; or

7. the waste handling area would be within the Riverfront Area as defined at 310 CMR 10.00.

(d) Criteria for Solid Waste Handling Facilities. No site shall be determined to be suitable or be assigned as a solid waste handling facility where:

1. the waste handling area would be within the Zone I of a public water supply;

2. the waste handling area would be within the Interim Wellhead Protection Area (IWPA) or a Zone II of an existing public water supply well or within a proposed drinking water source area, provided that the documentation necessary to obtain a source approval has been submitted prior to the earlier of either the site assignment application, or if the MEPA process does apply, the Secretary's Certificate on the Environmental Notification Form or Notice of Project Change, or where applicable, the Secretary's Certificate on the EIR or Final EIR, unless restrictions are imposed to minimize the risk of an adverse impact to the groundwater; and either

   a. the proponent can demonstrate to the satisfaction of the Department that

the facility cannot reasonably be sited outside the IWPA or Zone II; or
b. there would be a net environmental benefit to the groundwater by siting the facility within the Zone II or the IWPA where the site has been previously used for solid waste management activities.
3. the waste handling area would be within the Zone A of a surface drinking water supply;
4. the waste handling area would be within 500 feet upgradient, and where not upgradient, within 250 feet, of an existing or potential private water supply well existing or established as a Potential Private Water Supply at the time of submittal of the application, provided however, the applicant may show a valid option to purchase the restricted area including the well and a guarantee not to use the well as a drinking water source, the exercise of which shall be a condition of any site assignment;
5. the waste handling area of:
a. a transfer station that proposes to receive less than or equal to 50 tons per day of solid waste and utilizes a fully enclosed storage system such as a compactor unit, is 250 feet from;
i. an occupied residential dwelling; or
ii. a prison, health care facility, elementary school, middle school or high school, children's preschool, licensed day care center, or senior center or youth center, excluding equipment storage or maintenance structures.
b. any other transfer station or any handling facility is 500 feet from:
i. an occupied residential dwelling; or
ii. a prison, health care facility, elementary school, middle school or high school, children's preschool, licensed day care center, or senior center or youth center, excluding equipment storage or maintenance structures.
6. the waste handling area would be within the Riverfront Area as defined at 310 CMR 10.00; or
7. the maximum high groundwater table would be within two feet of the ground surface in areas where waste handling is to occur unless it is demonstrated that a two foot separation can be designed to the satisfaction of the Department.

(4) General Site Suitability Criteria. The following Site Suitability Criteria shall apply to all types of solid waste management facilities.
(a) Agricultural Lands. No site shall be determined to be suitable or be assigned as a solid waste management facility where:
1. the land is classified as Prime, Unique, or of State and Local Importance by the United States Department of Agriculture, Natural Resources Conservation Service; or
2. the land is deemed Land Actively Devoted to Agricultural or Horticultural Uses, except where the facility is an agricultural composting facility; and
3. a 100 foot buffer would not be present between the facility and those lands as classified at 310 CMR 16.40(4)(a)1 or 2.
(b) Traffic and Access to the Site. No site shall be determined to be suitable or be assigned as a solid waste management facility where traffic impacts from the facility operation would constitute a danger to the public health, safety, or the environment taking into consideration the following factors:
1. traffic congestion;
2. pedestrian and vehicular safety;
3. road configurations;
4. alternate routes; and
5. vehicle emissions
(c) Wildlife and Wildlife Habitat. No site shall be determined to be suitable or be assigned as a solid waste management facility where such siting would:
1. have an adverse impact on Endangered, Threatened, or Special Concern species

listed by the Natural Heritage and Endangered Species Program of the Division of Fisheries and Wildlife in its database;

2. have an adverse impact on an Ecologically Significant Natural Community as documented by the Natural Heritage and Endangered Species Program in its database; or

3. have an adverse impact on the wildlife habitat of any state Wildlife Management Area.

(d) Areas of Critical Environmental Concern. No site shall be determined to be suitable or be assigned as a solid waste management facility where such siting:

1. would be located within an Area of Critical Environmental Concern (ACEC), as designated by the Secretary of the Executive Office of Environmental Affairs; or

2. would fail to protect the outstanding resources of an ACEC as identified in the Secretary's designation if the solid waste management facility is to be located outside, but adjacent to the ACEC.

(e) Protection of Open Space. No site shall be determined to be suitable or be assigned as a solid waste management facility where such siting would have an adverse impact on the physical environment of, or on the use and enjoyment of:

1. state forests;

2. state or municipal parklands or conservation land, or other open space held for natural resource purposes in accordance with Article 97 of the Massachusetts Constitution;

3. MDC reservations;

4. lands with conservation, preservation, agricultural, or watershed protection restrictions approved by the Secretary of the Executive Office of Environmental Affairs; or

5. conservation land owned by private non-profit land conservation organizations and open to the public.

(f) Potential Air Quality Impacts. No site shall be determined to be suitable or be assigned as a solid waste management facility where the anticipated emissions from the facility would not meet required state and federal air quality standards or criteria or would otherwise constitute a danger to the public health, safety or the environment, taking into consideration:

1. the concentration and dispersion of emissions

2. the number and proximity of sensitive receptors; and

3. the attainment status of the area.

(g) Potential for the Creation of Nuisances. No site shall be determined to be suitable or be assigned as a solid waste management facility where the establishment or operation of the facility would result in nuisance conditions which would constitute a danger to the public health, safety or the environment taking into consideration the following factors:

1. noise;

2. litter;

3. vermin such as rodents and insects;

4. odors;

5. bird hazards to air traffic; and

6. other nuisance problems.

(h) Size of Facility. No site shall be determined to be suitable or be assigned as a solid waste management facility if the size of the proposed site is insufficient to properly operate and maintain the proposed facility. The minimum distance between the waste handling area or deposition area and the property boundary for the facility shall be 100 feet, provided that a shorter distance may be suitable for that portion of the waste handling or deposition area which borders a separate solid waste management facility.

(i) Areas Previously Used for Solid Waste Disposal. Where an area adjacent to the site of a proposed facility has been previously used for solid waste disposal the following factors shall be considered by the Department in determining whether a site is suitable and by the board of health in determining whether to assign a site:

1. the nature and extent to which the prior solid waste activities on the adjacent

site currently adversely impact or threaten to adversely impact the proposed site;
2. the nature and extent to which the proposed site may impact the site previously used for solid waste disposal; and
3. the nature and extent to which the combined impacts of the proposed site and the previously used adjacent site adversely impact on the public health, safety and the environment; taking into consideration:
a. whether the proposed site is an expansion of or constitutes beneficial integration of the solid waste activities with the adjacent site;
b. whether the proposed facility is related to the closure and/or remedial activities at the adjacent site; and
c. the extent to which the design and operation of the proposed facility will mitigate existing or potential impacts from the adjacent site.

(j) Existing Facilities. In evaluating proposed sites for new solid waste management facilities the Department and the board of health shall give preferential consideration to sites located in municipalities in which no existing landfill or solid waste combustion facilities are located. This preference shall be applied only to new facilities which will not be for the exclusive use of the municipality in which the site is located. The Department and the board of health shall weigh such preference against the following considerations when the proposed site is located in a community with an existing disposal facility:
1. the extent to which the municipality's or region's solid waste needs will be met by the proposed facility; and
2. the extent to which the proposed facility incorporates recycling, composting or waste diversion activities.

(k) Consideration of Other Sources of Contamination or Pollution. The determination of whether a site is suitable and should be assigned as a solid waste management facility shall consider whether the projected impacts of the proposed facility pose a threat to public health, safety or the environment, taking into consideration the impacts of existing sources of pollution or contamination as defined by the Department, and whether the proposed facility will mitigate or reduce those sources of pollution or contamination.

(l) Regional Participation. The Department and the board of health shall give preferential consideration to sites located in municipalities not already participating in a regional disposal facility. The Department and the board of health shall weigh such preference against the following considerations when the proposed site is located in a community participating in a regional disposal facility:
1. the extent to which the proposed facility meets the municipality's and the region's solid waste management needs; and
2. the extent to which the proposed facility incorporates recycling, composting, or waste diversion activities.

(5) Promotion of Integrated Solid Waste Management

(a) In determining whether a site is suitable for a combustion facility or a landfill the Department shall consider the following factors:
1. The potential yearly and lifetime capacity created by the proposed site use(s) in relation to the reasonably anticipated disposal capacity requirements and reduction/diversion goals of the Commonwealth and the geographic area(s) which the site will serve.
2. The extent to which the proposed site use(s), alone or in conjunction with other sites, provides or affords feasible means to maximize diversion or processing of each component of the anticipated waste stream in order to reduce potential adverse impacts from disposal and utilize reusable materials and only thereafter extract energy from the remaining solid waste prior to final disposal.
3. The extent to which the proposed use(s) of the site, alone or in conjunction with other sites, will contribute to the establishment and maintenance of a statewide integrated solid waste management system which will protect the public health and conserve the natural resources of the Commonwealth

(b) In determining whether a site is suitable for a combustion facility or a landfill the Department and the board of health shall consider the extent to which the proposed use of the site directly incorporates recycling and composting techniques or is otherwise integrated into recycling and composting activities for the geographic area(s) which the site will serve.
(c) A site proposed for a combustion facility or a landfill shall be reviewed to determine if the site is also suitable for a recycling or composting facility either in conjunction with or instead of the proposed facility.
(d) Site assignment applications which incorporate significant recycling or composting uses, in accordance with the goals of the statewide plan, shall receive preferred consideration.

(6) Waiver
(a) General. The Commissioner may waive any of the facility specific site suitability criteria contained in 310 CMR 16.40(3) not specifically required by law when the Commissioner finds that strict compliance with such criteria would result in undue hardship and would not serve to minimize or avoid adverse impact. Hardship based on delay in compliance by the proponent, increased facility construction or operational costs or reduced facility revenue generation will not be sufficient, except in extraordinary circumstances, to invoke 310 CMR 16.40(6).
(b) Criteria. A waiver shall not be granted unless the Commissioner determines that the granting of a waiver is necessary to accommodate an overriding community, regional, or state public interest and the granting of the waiver would not diminish the level of protection to public health and safety and the environment that will exist in the absence of the waiver.
(c) Considerations. In determining whether a waiver should be granted, the Commissioner shall consider, in addition to the criteria contained in 310 CMR 16.40(6)(b) the following factors:
1. the availability of other suitable sites in the affected municipality or regional district;
2. whether the site is in a preferred municipality as defined in M.G.L. c. 111, § 150A½;
3. the minimum facility size required to reasonably meet essential waste handling activities;
4. whether the waiver will result in environmental benefits in excess of those that could be achieved in the absence of the waiver;
5. the extent to which the proposed facility is part of an integrated solid waste management activity; and
6. whether the solid waste management objectives of the proposed project could be achieved in the absence of the waiver.
(d) Filings. All requests for waivers shall be filed and documented in accordance with 310 CMR 16.08(5)(c).

16.99: APPENDIX A

TECHNICAL FEE

The board of health shall assess the Technical Fee based on the type and size of facility or site stated on the application.

The maximum allowable Technical Fee that the board of health may assess shall be computed using the appropriate table for each type of facility.

TABLE 1. MAXIMUM TECHNICAL FEE FOR LANDFILLS

The maximum amount of the Technical Fee for a landfill is computed on the basis of the total area of the site specified in the application.

Size (acres)	Maximum Fee ($)
0-10	$15,000
10-25	$15,000 plus $1,000 for each acre in excess of 10
over 25	$30,000 plus $ 200 for each acre in excess of 25

TABLE 2. MAXIMUM TECHNICAL FEE FOR HANDLING FACILITIES

The maximum amount of the Technical Fee for a handling facility is computed on the basis of the maximum daily volume of waste (measured in tons per day) proposed to be accepted as specified in the application as follows:

Maximum Fee = $3000 + [$20 x Daily Volume (tons/day)]

TABLE 3. MAXIMUM TECHNICAL FEE FOR COMBUSTION FACILITIES

The maximum amount of the Technical Fee for a waste combustion facility is computed on the basis of the maximum daily volume of waste (measured in tons per day) proposed to be processed as specified in the application as follows:

Maximum Fee = $25000 + [$10 x Daily Volume (tons/day)]

ADJUSTMENT OF TECHNICAL FEE FOR INFLATION

The maximum allowable technical fee shall be adjusted for inflation using the following procedure:

MTF (current year) = MTF(Table) x [BCPI(current year - 1)/BCPI(1988)]

Where:

MTF(Table) = Maximum Technical Fee Computed using Table 1, 2 or 3 in this Appendix for the specific facility under consideration

MTF(current year) = Maximum Technical Fee for the current year (i.e., the MTF applicable to the Application being submitted)

BCPI(1988) = Boston Consumer Price Index for September, 1988

BCPI(current year - 1) = Boston Consumer Price Index for September for the year preceding the current year

The Index used for this inflation adjustment is the September figure for the Boston Consumer Price Index for All Urban Consumers issued by the US Department of Labor, Bureau of Labor Statistics.

REGULATORY AUTHORITY

310 CMR 16.00: M.G.L. c. 21A, §§ 2 and 8; c. 111, §§ 150A and 150A½.

These Regulations were effective as of 6/8/01.
Please direct any questions regarding these Regulations to:

Paul Emond of the Business Compliance Division at telephone 617-292-5974 or e-mail Paul.Emond@state.ma.us

[Privacy Policy]

ATTACHMENT B
Zone II for Jacques Wells Public Drinking Water Supply

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Regional Office, 627 Main Street, Worcester, MA 01608

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

August 26, 1999

Keith Bossung, Vice President
Massachusetts American Water Co.
75 Terry Drive
Hingham, MA 01450

Millbury - PWS ID # 2186000
Transmittal # P20820
Massachusetts American Water Company
Millbury District
RE: BRP WS 08 - Approval of Zone II Delineation for Existing Wells

Dear Mr. Bossung:

The Department of Environmental Protection, Bureau of Resource Protection, Central Regional Office ("the Department") is in receipt of an application for the approval of the Zone II wellhead protection areas associated with the existing wells serving the Massachusetts American Water Company's Millbury water supply system. These materials were received December 2, 1998 as part of the resubmittal of the Zone II package that was originally found administratively deficient by the Department in a letter dated May 6, 1998.

The Department has reviewed this report for conformance with the Massachusetts Drinking Water Regulations, 310 CMR 22.00 and the Department's "Guidelines and Policies for Public Water Systems", revised November 1997 (the "Guidelines"). The review provided adequate data and analysis to substantiate the submitted wellhead protection delineations (Zone II's). The Zone III boundaries were delineated by the Department.

The Department, acting under the authority of the applicable provisions of 310 CMR 22.00, the Drinking Water Regulations (the "Regulations"), and the Guidelines, approves the Zone II delineation for the Millbury Avenue, Oak Pond, and the Main Street Wells, No. 1 and 2 with the following condition:

> The attached Conceptual Zone II and Zone III Delineation Maps with a Map Title Block must be signed by the Water Purveyor and the Consultant and resubmitted to the Department.

Please note that this approval does not relieve you of your obligation to comply with all other applicable rules and regulations or to obtain any other necessary permits.

If you have any questions regarding this letter, please contact Tom Aquino of the Bureau of Resource Protection (BRP), Drinking Water Program (DWP) at 792-7650 extension 3701.

Very truly yours,

Robert A. Kimball, P.E.,
Environmental Engineer
Bureau of Resource Protection

TA/hs

enc.: Conceptual Zone II and Zone III Delineation Maps

cc: Millbury Board of Health
Millbury Board of Selectmen
David Edson, P.E., Talkington Edson Environmental Management, LLC.
Jana Leung, BRP, CERO
Suzanne Robert, BRP, DWP, Boston
Dave Terry, BRP, DWP, Boston

MASSACHUSETTS AMERICAN WATER COMPANY
HINGHAM, MASSACHUSETTS

CONCEPTUAL ZONE II DELINEATIONS FOR EXISTING WELLS

MILLBURY DISTRICT

REVISED NOVEMBER 1998

TETRA TECH

Tom
TRANS.# P20823

TALKINGTON EDSON
Environmental Management, LLC
69 Milk St., Suite 205, Westboro, MA 01581

tel: 508-366-0772
fax: 508-366-1807

October 31, 1998

Mr. Dana F. Samuelson
Department of Environmental Protection
Central Regional Office
627 Main Street
Worcester, MA 01608

Re: Massachusetts American Water Company, Millbury District
PWS ID #2186000
Zone II Delineation

Dear Mr. Samuelson:

Earlier this year, a Conceptual Zone II Delineation report was submitted by Talkington Edson Environmental Management, LLC (TEEM) for the referenced water system. Subsequently, DEP issued a letter, dated May 6, 1998, listing additional information that was required to be submitted.

On behalf of the Massachusetts American Water Company, TEEM hereby requests a 60 day extension to the time period referenced in the letter on page 2 for submission of the additional data.

Sincerely,

David F. Edson, P.E.
Principal

C: K. Bossung, MAWC

TALKINGTON EDSON
Environmental Management, LLC
69 Milk St., Suite 205, Westboro, MA 01581

tel: 508-366-0772
fax: 508-366-1807

November 25, 1998

Mr. Keith Bossung
Vice President
Massachusetts American Water Company
P.O. Box 9112
Hingham, MA 02043-1545

Re: Conceptual Zone II Delineations - MILLBURY DISTRICT

Dear Mr. Bossung:

Talkington Edson Environmental Management, LLC. is pleased to submit the attached revised report for the referenced project.

The Zone II Delineations and report information have been revised in accordance with comments received from the Massachusetts Department of Environmental Protection (DEP) on the initial report.

TEEM appreciates the opportunity to provide engineering and hydrogeologic services to the Massachusetts American Water Company.

Sincerely,

David F. Edson, P.E.
Principal

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APPENDIX - Maximum Month Pumpage Data

1.0 INTRODUCTION

The Massachusetts Department of Environmental Protection (MA DEP) has established the goal of Zone II Delineations to be completed for all public groundwater supplies. The completion of the Zone II Delineations is consistent with the wellhead protection program for the state.

On behalf of the Massachusetts American Water Company (MAWC) which owns and operates the public water system serving the Town of Millbury, Talkington Edson Environmental Management, LLC. (TEEM) has prepared this Conceptual Zone II Delineation report for the existing wells in the Town of Millbury.

In 1989, the Town of Millbury engaged SEA Consultants, Inc. (SEA) to prepare a town-wide groundwater resource evaluation and aquifer protection plan. This report provided a significant amount of data for the preparation of the Conceptual Zone II Delineations for the four Millbury wells.

The existing public water supply system in Millbury consists of four pumping wells in three locations within coarse, unconsolidated glacial material in a long sinuous aquifer associated with the Blackstone River and its tributaries. These three locations are commonly referred to as the North Main Street Wells #1 and #2, Millbury Avenue Well, and Oak Pond Well.

The delineation procedure and report are based on the MA DEP 1996 Guidelines and Policies for Public Water Systems, Section 4.7 Conceptual Zone II for Existing Wells and report entitled "Town-Wide Groundwater Resource Evaluation and Aquifer Protection Plan" prepared by SEA, dated September 1989.

This revised report version supercedes an earlier report dated December 1997.

2.0 BEDROCK AND SURFICIAL GEOLOGY

Much of the text in this section describing general bedrock and surficial geology has been extracted from the Town-Wide Groundwater Resource Evaluation and Aquifer Protection Plan previously prepared by SEA for the Town of Millbury, MA. The text has been modified slightly to summarize information that has relevance to water supply and quality.

Millbury is located in the Central Uplands physiographic province of Massachusetts. The Millbury landscape is characterized by glacial till (dense mixtures of silt, sand, gravel, and boulders) covered bedrock hills and ridges that contain river and brook valleys filled with glacial outwash (loose to dense stratified sands and gravels) and alluvium (loose stratified silts and sands). The predominate bedrock formation in Millbury is called the Nashoba Formation and consists primarily of metamorphic schist and gneiss. In the millions of years preceding the glacial ages, the rock formations were uplifted by mountain building forces and subsequently eroded at varying rates depending on rock durability and structure. Glacial ice advances and recessions scoured the bedrock deepening existing valleys and carving newer valleys.

New England has been glaciated at least several times. Each re-advance of the glacial ice overrode existing soil deposits, reworking the unconsolidated materials, and scouring the bedrock surface in its southward path. The advance of glacial ice and its grinding action beneath resulted in massive deposits of "till" usually placed directly on the bedrock surface. "Till" is a poorly sorted mixture of densely compacted sand, silt, clay, angular gravel and boulders up to room size. Till is considered a poor source of ground water, generally yielding barely enough for a single home due to its low permeability. Till covers most of the hills and valley walls in the Town of Millbury.

Approximately 15,000 years ago, the last mass of glacial ice began to melt as the climate warmed. Along the irregular edge of the melting ice mass, meltwater streams poured out of subglacial tunnels or through valleys carved in the ice. As the ice retreated northward, it uncovered bedrock hills and valleys. In the openings between the melting ice and till covered hills, the streams deposited washed sediment in their channels and in ice margin ponds and lakes. These deposits are called "stratified drift" or "outwash". The stratification depended largely on the rate of water flow which often varied according to varying seasonal conditions. High velocity streams deposited coarser materials like sand, gravel, and boulders that have a relatively high permeability. The slower velocity streams deposited silt and fine sands. Very quiet waters typically resulted in fine sand, silt, and clay deposits. The deposits of coarser sands and gravels have a high permeability and are close to the water table. These deposits are best sources for municipalities due to the need for high pumping rates and excellent recharge. Glacial deposits of finer sands, silts, and clays are poor sources for municipal use. Therefore, the aquifer delineated in this report, and as mapped by the USGS, consists primarily of coarse-grained soils deposited from high velocity meltwater streams in valleys.

A surficial geology map indicating the distribution and identification of glacial materials was presented as Plate 2 in the previously referenced "Town Wide Groundwater Resources Evaluation" report prepared by SEA.

All four municipal wells (North Main Street Wells #1 and #2, Millbury Avenue Well, and the Oak Pond Well) are located within a long relatively narrow stratified drift aquifer associated with the Blackstone River and its tributary, Dorothy Brook/Pond. Figure 1 indicates the location of the municipal wells within the regional topography. All four wells withdraw ground water from the unconsolidated saturated sand and gravel deposits overlying the glacially scoured bedrock valley and valley walls.

The North Main Street wells are located in the north central section of Town and are situated along the west bank of the Blackstone River. The Oak Pond Well is located in the northern part of Millbury along the north shore of Dorothy Pond. The Millbury Avenue Well is located in the eastern section of Millbury between Dorothy Pond and the Blackstone River. The Millbury Avenue Well is also located to the immediately to the west of Dorothy Brook.

Although these three well locations are part of the same regional aquifer system, they act as separate aquifers for purposes of water withdrawal. Aquifer characteristics are presented in Table 1. Table 2 contains construction characteristics for the existing wells. These data have been used for the delineation of the Conceptual Zone II area for each production well. The data base is limited to those publications listed in Section 5.0, References. Where data gaps occur, conservative assumptions using existing data and industry accepted aquifer characteristic values for similar aquifers have been used for these Conceptual Zone II delineations.

Subsurface geologic cross-sections were prepared for the three production well locations. The six cross-sections, each at right angles to the other have been developed using Plate I and Appendix A, Subsurface Data Points Table contained in the referenced SEA report entitled "Town Wide Groundwater Resource Evaluation."

The locations of each cross-section are shown on Figure 1 and the cross-sectional profiles are shown on Figures 2 through 4. The bedrock aquifer, consists of consolidated bedrock, yields ground water in sufficient quantities for rural domestic supplies and is not considered to be a source capable of public supplies. Ground water quality from stratified drift is considered to be generally good within the Blackstone River Basin. An indication of the Millbury wells ground water quality is presented in the Annual 1996 Water Quality Report submitted by MAWC to the MA DEP, Division of Water Quality. Representative untreated water samples from all four operational wells were obtained and analyzed for twenty-four (24) inorganic parameters in April 1996. Table 3 presents a summary of the results.

Surficial geology, as presented in the USGS Hydrologic Investigations Atlas HA-682, is shown on Figure 8.

Table 1. Aquifer Characteristics.

Hydrogeologic System Identification	North Main Street Unit		Millbury Avenue Unit		Oak Pond Unit	
General Location	North-central section of Town, parallel to Blackstone River		Eastern section of Town, associated with Dorothy Brook and Blackstone River		Northwestern section of Town, northerly and adjacent to Dorothy Pond	
Stratigraphy	25 ft +/- saturated fine to medium sand overlying 25 ft +/- sand and gravel (glaciofluvial ice-contact deposits)		Sand and gravel (glaciofluvial ice-contact deposits)		Sand and gravel (glaciofluvial ice-contact deposits)	
Existing Municipal Wells	#1 and #2 North Main Street Stations		Millbury Avenue Well		Oak Pond Well	
Transmissivity (T)	40,000 - 100,000 gpd/ft[2]		42,000 gpd/ft[3]		42,000 gpd/ft[3]	
Hydraulic Conductivity (k)	1,100 - 1,790 gpd/ft^2[3]		1,400 gpd/ft^2[3]		1,400 gpd/ft^2[3]	
Saturated Thickness	36-56 ft		30 ft		30 ft	
Hydraulic Gradient (i)[2]	0.0017 ft/ft		0.0071 ft/ft		0.0018 ft/ft	
Approved Pumping Rates (Q)[4]	**Short-Term**	**Dependable**	**Short-Term**	**Dependable**	**Short-Term**	**Dependable**
	600 gpm (Well #1)	575 gpm (Well #1)	400 gpm	160 gpm	525 gpm	425 gpm
	275 gpm (Well #2)	250 gpm (Well #2)				
Specific Capacity	30 gpm/ft of drawdown (50% of 45 wells)[1]		30 gpm/ft of drawdown (50% of 45 wells)[1]		100 gpm/ft of drawdown	
Recharge Source of Wells	Significant recharge from Blackstone River		Recharge from surface water (Howe Pond and tributaries from Dorothy Pond)		Recharge from northerly extensions of Dorothy Pond	
USGS Hydrologic Atlas Yield Classification[1]	"50 to 250 gpm" and "250 gpm and more"		"50 to 250 gpm" and "250 gpm and more"		"50 to 250 gpm" and "250 gpm and more"	

Notes:
[1]USGS regional average
[2]Calculated from data presented in the SEA, Town Wide Groundwater Evaluation, 1989
[3]Calculated by T = (Hydraulic Conductivity)(Saturated Thickness); Average value of Hydraulic Conductivity obtained from "Groundwater and Wells", 2nd Edition, Fletcher Driscoll, Johnson Division, St. Paul, MN, 1986.
[4]Data from MAWC files.

Table 2. Existing Well Construction Characteristics.

	North Main Street		Millbury Avenue	Oak Pond
	#1	#2		
Date Constructed	1966	1965	1894	1957
Depth (ft)	44.5	60	35	34
Diameter	24 in. by 48 in.	24 in. by 48 in.	20 ft	24 in.
Static Water Level (ft)	8.2	4.0	4.0	2.5
Specific Capacity (gpm/ft of drawdown)	254	748	----	100
Pump Test Data	Yes, 1965	Yes, 1965	No	No

Table 3. Groundwater Quality Test Results, April 1996.

		North Main Street		Millbury Avenue	Oak Pond
		#1	#2		
Parameter	**MCL (mg/L)**	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Arsenic	0.05	ND	0.002	ND	ND
Barium	2.0	ND	ND	ND	ND
Cadmium	0.005	ND	0.0003	ND	ND
Chromium	0.1	ND	ND	ND	ND
Fluoride	4.0	ND	ND	ND	ND
Mercury	0.002	ND	ND	ND	ND
Selenium	0.05	ND	ND	ND	ND
Sodium		60.96	61.91	22.57	34.55
Antimony	0.006	ND	0.0005	ND	ND
Beryllium	0.004	ND	ND	ND	ND
Nickel		ND	ND	ND	ND
Thallium	0.002	ND	ND	ND	ND
Sulfate		24.9	24.1	12.4	19.9
Calcium		17.89	19.72	9.0	16.66

Table 3. Groundwater Quality Test Results, April 1996.

		North Main Street		Millbury Avenue	Oak Pond
		#1	#2		
Parameter	**MCL (mg/L)**	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Magnesium		2.76	3.17	1.7	2.87
Aluminum		ND	ND	0.009	0.014
Potassium		37.54	32.51	18.2	44.64
Iron		ND	ND	ND	ND
Manganese		0.17	0.3	ND	ND
Chloride		93.6	97.2	39.8	51.7
Silver		ND	ND	ND	ND
Copper		ND	ND	ND	ND
Zinc		ND	ND	ND	ND
Nitrate	10.0	1.61	1.3	0.31	2.0

Notes:
ND = Not Detected
mg/L = Milligrams per liter

Reference: MAWC

3.0 CONCEPTUAL ZONE II DELINEATION METHODOLOGY

The Conceptual Zone II, as defined by the MA DEP, is a "delineated zone of contribution in which a combination of analytical and surficial geologic mapping techniques are applied"for "wells with planned yields 100,000 gpd and greater".

The general methodology utilized to prepare the Zone II delineations for the four Millbury production wells is described as follows:

- Obtain and review existing well records, reports, and water quality and pumping data contained in the MAWCs files;
- Obtain and review a copy of the "Town Wide Groundwater Resource Evaluation and Aquifer Protection Plan", Millbury, MA dated September 1989, prepared by SEA Consultants;
- Confer with the USGS regional office to obtain the latest USGS hydrogeological and geological reports and studies for the Millbury, MA drainage basins;
- Verify pumping well locations and view each well site and vicinity, and observe surrounding land use;
- Compile relevant existing and available hydrogeological data on the latest USGS topographic maps, identify primary aquifer areas, pumping well locations, and selected boring/test well locations. Representative generalized geologic cross-sections were prepared based on existing subsurface data. No additional field investigations involving drilling or pump testing were done for this report;
- Perform Conceptual Zone II delineation calculations using the appropriate formula and then delineate the area based on the calculations and USGS aquifer mapping; and
- Prepare this report as a compilation and evaluation of water resource conditions and documentation for long term ground water quality protection, for each of the three Conceptual Zone II ground water withdrawal locations.

The limits of the aquifers for the three well sites were delineated using data contained in the USGS document "Water Resources of the Blackstone River Basin, MA," Hydrologic Atlas HA 682, dated 1986, and the report entitled "Town Wide Groundwater Resource Evaluation and Aquifer Protection Plan, September 1989, by SEA. TEEM used the aquifer limits as depicted in the USGS hydrologic atlas rather than the limits used by SEA; however, the limits coincide occasionally. The USGS identifies three color codes for unconsolidated deposits indicating "expected quantities of ground water that can be developed for single wells of large diameter (8 inches or more) or groups of six or more small diameter (2-1/2 inches) wells at individual sites". For purposes of this Conceptual Zone

II Delineation, all three color coded areas were included, and then the boundaries refined based on the calculations described in Section 4.

Zone II is defined as the land area which supplies water to a municipal well under the most severe pumping and recharge conditions which can realistically be anticipated. These conditions are further described as maximum "rated safe yield pumping" at 180 days with no recharge. Ground water divides formed by pumping determine the lateral and downgradient boundaries of Zone II. The Zone II is then extended upgradient to the point where it meets a till, bedrock or a regional ground water divide.

In cases where the regional upgradient ground water divide is distant, the Zone II capture area is generally considered to extend upgradient to a point at which the capture area is sufficiently large to supply recharge equal to the pumping rate (i.e. point of zero drawdown after 180 days of continuous pumping with no recharge).

In areas with high hydraulic ground water gradients, a ground water flow "stagnation point" exists downgradient of the well at the point where the drawdown produced by the well just overcomes the prevailing hydraulic gradient. This phenomenon is mathematically described by the Todd Uniform Flow Equation which gives the downgradient stagnation point (r) and maximum upgradient width (y) under pumping conditions assuming isotropic conditions, as follows:

$$r = \frac{Q}{2\Pi Ti}$$

$$y = \frac{Q}{Ti}$$

where: Q = flow in ft^3/day
T = aquifer transmissivity in ft^2/day
i = hydraulic gradient under non-pumping conditions, dimensionless

These two equations were used to estimate boundary conditions for flow capture under Zone II conditions. Table 4 provides parameter values obtained during our data review and analysis.

Table 4. Data Compilation for Todd Uniform Flow Equation.

		North Main Street		Millbury Avenue	Oak Pond
		#1	#2		
Q	**Maximum Historic Monthly Withdrawal**	583 gpm [2] (August 1993)	319 gpm [2] (August 1997)	907 gpm [2] (April 1997)	531 gpm [2] (May 1993)
T	**Aquifer Transmissivity**	40-100,000 gpd/ft[1]	40-100,000 gpd/ft[1]	42,000 gpd/ft[4]	42,000 gpd/ft[4]
i	**Hydraulic Gradient**	0.0017 ft/ft[3]	0.0017 ft/ft[3]	0.0071 ft/ft[3]	0.0018 ft/ft[3]
Data Used in Equation		Q = 902 gpm (combined)	Q = 902 gpm (combined)	Q = 907 gpm	Q = 531 gpm
		T = 80,000 gpd/ft	T = 80,000 gpd/ft	T = 42,000 gpd/ft	T = 42,000 gpd/ft
		i = 0.0017 ft/ft	i = 0.0017 ft/ft	i = 0.0071 ft/ft	i = 0.0018 ft/ft

References/Notes:

[1] SEA, Town Wide Groundwater Evaluation, 1989

[2] Information provided by the MAWC

[3] Calculated from data presented in the SEA, Town Wide Groundwater Evaluation, 1989

[4] Calculated by T = (Hydraulic Conductivity)(Saturated Thickness); Average value of Hydraulic Conductivity obtained from "Groundwater and Wells", 2nd Edition, Fletcher Driscoll, Johnson Division, St. Paul, MN, 1986.

4.0 CONCEPTUAL ZONE II DELINEATIONS

4.1 North Main Street Wells #1 and #2

The wells referred to as the North Main Street wells are located in the north central section of Millbury near the Blackstone River. The locations of the two wells are shown on Figures 1 and 5 indicating their positions relative to surrounding topography. The wells, identified as #1 and #2, are about 500 feet apart. Well #1 was installed in 1966 to a depth of 44.5 feet and its pumping rate varies from 475 to 606 gpm with a static water level at 8.2 feet below ground surface. Well # 2 was installed in 1965 to a depth of 60 feet and its pumping rate varies between 275 and 505 gpm. The maximum monthly withdrawal of record, on a gallons per minute basis, was 583 gpm in August 1993 and 319 gpm in August 1997 for Wells #1 and #2, respectively (see Appendix A).

The static water level is approximately 4.0 feet bgs. Prolonged pump tests were performed on Wells #1 and #2 during January 1965. The pump test data are included in Appendix C of the referenced Town Wide Ground water Resource Evaluation by SEA.

Exploration for additional water supplies in the North Main Street area were conducted by MAWC. The most recent investigations were performed by D.L. Maher Company, Inc. (Maher) in 1996. The exploration consisted of seven test wells within the Wells #1 and #2 area and extending northerly within a 19 acre parcel of land. Each test well was drilled to bedrock refusal (e.g., varied from 28 to 53 feet, averaging about 40 feet). Well screens were set between 31 and 52 feet and pumping rates varied from 40 to 80 gpm.

Two locations identified as #2-96 and #6-96 were identified as potential well locations. All wells were within sand and gravel deposits. Preliminary water testing indicated no volatile organic compounds (VOCs), but indicated elevated concentrations of sodium and manganese. The Maher report concludes by stating that wells at #2-96 and #6-96 could yield up to 367 gpm and 798 gpm, respectively.

Other ground water exploration occurred in 1964 when test wells #22-64 and #23-64 were developed as Wells #1 and #2. Additional test drilling was performed in the same area by Maher in 1971. Five test wells were completed (#1-71 to #5-71). Drillers logs indicate similar soil conditions as revealed by the most recent program in 1996. Maher also installed two observation wells adjacent to the Wells #1 and #2 pumphouses in April 1973.

4.1.1 Aquifer Conditions

The North Main Street wells occur within a north-south trending, high yield aquifer as mapped by the USGS that encompasses at least 400 acres. The aquifer is narrow near the Wells #1 and #2 and widening to the north as the Blackstone River Valley widens. The aquifer surrounding the North Main Street wells extends at least 3 miles

north into Worcester, one-half mile south , and is approximately 1/4 mile wide at the well locations. Regional and local ground water flow direction is north to south following the course of the Blackstone River.

The North Main Street wells penetrate unconsolidated, glaciofluvial ice-contact deposits consisting of fine- to medium-sand in the upper one half of the saturated thickness (50 - 55 feet), and coarse-sand and gravel in the lower one half. Generalized subsurface geologic cross-sections A-A' and B-B' presented as Figures 2 and 3 indicate the subsurface conditions based on drillers logs. Transmissivity was calculated by SEA as 80,000 gallons per day per foot (gpd/ft) with a range from 40,000 to 100,000 gpd/ft , and a regional hydraulic gradient of 0.0017 ft/ft has been determined by TEEM using historic water table elevations at well locations and ground water contours from the SEA report.

4.1.2 Conceptual Zone II Delineation

Section 4.3 of the MA DEP "Guidelines and Policies for Public Water Systems" dated November 1996 describes the methods used for the Conceptual Zone II delineation. This section presents the parameters used for the Conceptual Zone II delineation and the solution to the Todd Uniform Flow Equation. The Conceptual Zone II delineation is shown on Figure 5. Table 5 presents a summary of the calculations.

Solutions to the Todd equation were performed for Wells #1 and #2 pumping individually, and then pumping together. For the Zone II delineation, the two wells were considered a single pumping source, and the maximum monthly flow rates were combined. Thus, a combined flow rate of 902 gpm (174,000 ft^3/day) was used. A transmissivity value of 80,000 gpd/ft (10,700 ft^2/day) was used based on conservative values previously calculated by SEA from pump test data included in the 1989 Town Wide Ground Water Evaluation Report. An overall ground water hydraulic gradient to the south of 0.0017 ft/ft was used based on area ground water table and surface water elevations (reflecting water table conditions).

Using these values, the downgradient stagnation point is estimated to be approximately 3,050 feet south of the well and the maximum upgradient lateral width is estimated to be approximately 19,100 feet. The upgradient Conceptual Zone II boundary was determined by extending the upgradient width to the recharge boundary consisting of a sharp bend in the Blackstone River that bisects the narrow valley that occurs approximately 2½ miles north of these wells. The calculated upgradient width was adjusted to end at valley walls and the limits of the USGS mapped high yield aquifer.

Table 5. Todd Uniform Flow Calculation Summary for North Main Street Wells

	Well #1	Well #2	Wells #1 & #2 Combined
Q Flow	583 gpm ($112{,}000\ ft^3/day$)	319 gpm ($61{,}400\ ft^3/day$)	902 gpm ($174{,}000\ ft^3/day$)
T Transmissivity	80,000 gpd/ft ($10{,}700\ ft^2/day$)	80,000 gpd/ft ($10{,}700\ ft^2/day$)	80,000 gpd/ft ($10{,}700\ ft^2/day$)
i Hydraulic Gradient	0.0017 ft/ft	0.0017 ft/ft	0.0017 ft/ft
r = Downgradient stagnation point = $\frac{Q}{2\pi Ti}$			
	r = 980 ft	537 ft	1,520 ft
y = Maximum upgradient width = $\frac{Q}{Ti}$			
	y = 6,160 ft	3,380 ft	9,570 ft

The Conceptual Zone II delineation shown on Figure 5 is valid when both wells are in operation because the downgradient and lateral boundaries of the delineation extend to the limits of thee formation as defined by USGS. The size of the Conceptual Zone II area is approximately 1,215 acres or 1.9 square miles.

4.1.3 Land Use Within the Conceptual Zone II

Observed land use within the Conceptual Zone II area is a mix of residential and urban uses. The Blackstone River bisects the area from North to South. The Upper Blackstone Regional Sanitary District waste water treatment plant is located approximately one mile north at the Worcester-Millbury town line. In addition two major highways, Route 146 and the Massachusetts Turnpike (Route 90) cross the Conceptual Zone II area. Locations of potential contamination sources were identified and described in the Town-Wide Ground water Resources Evaluation report prepared by SEA in 1989 and is available for reference purposes.

The immediate area surrounding Wells #1 and #2 are primarily woodlands occurring on the floodplain adjacent to the Blackstone River. The Town of Millbury has an expanding waste water collection and treatment system.

The principal known threats to the well water quality are discharge from the Upper Blackstone waste water plant and the potential for a spill on the major highways. Both events could potentially impair the Blackstone River quality, thus impacting the adjacent aquifer. In addition, the Route 146/Mass Turnpike area just north of the wells has been and will continue to be the site of significant construction activity related to the new turnpike interchange and reconstruction of Route 146.

4.2 Oak Pond Well

The Oak Pond Well is located in the northeastern section of town directly north of Dorothy Pond. The location of the well is shown on Figures 1 and 6. The Oak Pond Well was installed in 1957 to a depth of 34 feet. A review of the well history indicates pumping rates that vary from 425 to 700 gpm. The maximum monthly withdrawal of record, on a gallons per minute basis, was 531 gpm in May 1993. The static water level is approximately 5 to 7 feet. No prolonged pumping tests have been done for the Oak Pond Well. No supplemental ground water exploratory drilling has been done in the Oak Pond area.

4.2.1 Aquifer Conditions

The Oak Pond well is located in unconsolidated glaciofluvial ice-contact deposits consisting of stratified sand and gravel. The well is approximately 34 feet in depth where it rests on the bedrock surface. Regional ground water availability mapping by the USGS indicated that the aquifer in the vicinity of the Oak Pond well extends to

Dorothy Pond to the south and the Millbury-Worcester town line to the north. Subsurface geologic cross-sections C-C' and D-D' are shown on Figure 3. They are based on information contained in driller logs. No prolonged pumping tests have been done, a transmissivity was estimated at 42,000 gpd/ft (5,610 ft^2/day) based on the average hydraulic conductivity of fine to coarse gravel and fine to coarse sand, a porosity of 25 - 40%, and specific yield of 15 - 25%, all typical values for a sand and gravel mixture, as published in "Groundwater and Wells", Second Edition F. Driscoll, Johnson Division.

The direction of ground water flow is southerly toward Dorothy Pond and the water table is relatively shallow (3 to 10 feet) with the static water level at the well approximately 2.5 feet.

4.2.2 Conceptual Zone II Delineation

Section 4.3 of the MA DEP "Guidelines and Policies for Public Water Systems" dated November 1996 describes the methods used for the Conceptual Zone II delineation. This section presents the parameters used for the Conceptual Zone II delineation and the solution to the Todd Uniform Flow Equation. The Conceptual Zone II delineation is shown on Figure 6. Table 6 was prepared to summarize the basic data and the results of the calculations.

For purposes of calculating the Conceptual Zone II the maximum historic monthly pumping rate of 531 gpm (102,000 ft^3/day) was used in the equation. A transmissivity value of 42,000 gpd/ft^2 (5,610 ft^2/day) was used based on an average transmissivity of sand and gravel. A ground water flow gradient (to the south) of 0.0018 ft/ft. was based on area ground water table and surface water elevations that reflect water table conditions. Using these values, as shown in Table 6, the downgradient stagnation point is estimated to be approximately 1,610 feet south of the well, and the maximum upgradient lateral width is estimated to be approximately 10,100 feet. However, the Conceptual Zone II lateral limit was adjusted to reflect the USGS aquifer limit to the west and the base of a hill (also aquifer limit) to the east. The upgradient boundary was determined by extending the upgradient width to the prevailing recharge boundaries north of the well, consisting of drainage basin boundaries.

The Conceptual Zone II delineations shown on Figure 6. The size of the Conceptual Zone II area is approximately 145 acres.

The Zone III delineation is also shown on Figure 6 representing the boundaries of surface drainage and precipitation recharge to Zone II.

Table 6. Todd Uniform Flow Calculation Summary for Oak Pond Well

Q Flow	531 gpm (102,000 ft^3/day)
T Transmissivity	43,000 gpd/ft (5,750 ft^2/day)
i Hydraulic Gradient	.0018 ft/ft
r = Downgradient stagnation point = $\frac{Q}{2\pi Ti}$ r = 1,570 ft	
y = Maximum upgradient width = $\frac{Q}{Ti}$ y = 9,860 ft	

4.2.3 Land Use Within Conceptual Zone II

Observed land use within Zone II is primarily residential and woodland. The Massachusetts Turnpike (Route 90) crosses the Zone II area from east to west immediately south of the Oak Pond well. Two small shallow ponds occur immediately west and southwest of the well. These ponds drain into the much larger Dorothy Pond south of the well. The property owned by MAWC surrounding the well is primarily undisturbed woodland.

The Oak Pond area is not sewered, and the pond typically exhibits significant algae blooms in the summer. This observation, combined with a slightly elevated nitrate level in the well water, indicates that excess nutrients are entering the pond and possibly affecting the aquifer.

4.3 Millbury Avenue Well

The Millbury Avenue well is located in the center of the eastern one-half of the Town, immediately east of Prospect Hill. The well is between Dorothy Pond and Brook to the north and east, and north of the Blackstone River. The location of the well is shown on Figures 1 and 7 indicating the topographic expression the area as well as highways and surface water courses. The Millbury Avenue well was constructed in 1894 and is 35 feet deep. The well diameter is 20 feet and its sides are composed of stone blocks. The well has two pumps rated at 850 and 900 gpm according to the previously referenced SEA report. The maximum monthly withdrawal of record, on a gallons per minute basis, was 907 gpm in April 1997. The water table is approximately four to six feet below ground surface at the well. No prolonged pumping tests have been done at the Millbury Avenue well. Test drilling in the area was performed by Maher in 1972, but did not result in any additional well locations or wells.

4.3.1 Aquifer Conditions

The Millbury Avenue well is sited on unconsolidated, glaciofluvial ice-contact deposits consisting of stratified sand and gravel. The maximum thickness of the sand and gravel is approximately 50 feet with at least 40 feet considered to be saturated. Since the well is located close to Prospect Hill, the bedrock surface rises steeply to the west, as revealed by test drilling and as shown on subsurface geologic cross-sections E-E' and F-F' (Figure 4). Regional ground water availability mapping by the USGS indicates that the aquifer in the Millbury Avenue vicinity extends from Dorothy Pond at the northern end to the Blackstone River to the south. The well has been determined by MAWC to be under the influence of surface water. Howe Pond and its tributaries are the surface water bodies in close proximity to the well. Since no prolonged pump tests have been done at the site, a transmissivity was estimated based on the average hydraulic conductivity of fine- to coarse-sand and fine- to coarse-gravel, porosity of 25 - 40%, and specific yield of 15 - 25%, all typical values for sand

and gravel, as published in "Groundwater and Wells" 2nd Edition, F. Driscoll, Johnson Division.

No test drilling or boring data exists for the 1894 well installation but 1972 test drilling in the vicinity indicated "fine sand and gravel", providing only a limited description. The ground water flow direction is southerly toward the Blackstone River. The water table is near or at the ground surface in the well vicinity with the static water level at the well being about four feet.

4.3.2 Conceptual Zone II Delineation

Section 4.3 of the MA DEP "Guidelines and Policies for Public Water Systems" dated November 1996 describes the methods used for the Conceptual Zone II delineation. This section presents the parameters used for the Conceptual Zone II delineation and the solution to the Todd Uniform Flow Equation. The Conceptual Zone II delineation is shown on Figure 7. Table 7 was prepared to summarize the basic data and the results of the calculations

For purposes of calculating the Conceptual Zone II, the maximum historic monthly pumping rate of 907 gpm (175,000 ft^3/day) was used. A transmissivity value of 42,000 gpd/ft^2 (5,610 ft^2/day) was used based on an average transmissivity for sand gravel. A ground water flow gradient (to the south) of 0.0071 ft/ft was based on area ground water table elevations and surface water elevations that reflect water table conditions. Using these parameters as shown on Table 7, the downgradient stagnation point is estimated to be approximately 700 feet south of the well, and the maximum upgradient lateral width of the well is estimated to be approximately 4,390 feet. The upgradient or northern boundary was determined by extending the upgradient width to the limits of the aquifer as mapped by the USGS and the base of the steep unnamed hill. The Conceptual Zone II area for the Millbury Avenue well includes Howe Pond.

The Conceptual Zone II delineations shown on Figure 7. The size of the Conceptual Zone II area is approximately 182 acres.

The Zone III delineation is also shown on Figure 7 representing the boundaries of surface drainage and precipitation recharge to Zone II.

4.3.3 Land Use Within Conceptual Zone II

Land use within Zone II is primarily residential. Howe Pond occurs north of the well and its tributaries flow southeasterly through the area. Woodlands occur on Prospect

Table 7. Todd Uniform Calculation Summary for Millbury Avenue Well

Q Flow	907 gpm (175,000 ft^3/day)
T Transmissivity	43,000 gpd/ft (5,750 ft^2/day)
i Hydraulic Gradient	0.0071 ft/ft
r = Downgradient stagnation point = $\frac{Q}{2\pi Ti}$	r = 683 ft
y = Maximum upgradient width = $\frac{Q}{Ti}$	y = 4,290 ft

Hill to the west and an unnamed hill and ridge to the north. The property and surrounding the well owned by MAWC is undisturbed woodland and wetlands.

The Millbury Avenue well is a large diameter, shallow dug well which could be susceptible to contamination. The well was installed long ago and does not have the sanitary setback from Millbury Avenue (although no buildings other than the pumping station, and certainly no septic systems are within a 400 radius of the well).

5.0 REFERENCES

Town Wide Groundwater Resource Evaluation and Aquifer Protection Plan, Millbury, Massachusetts, SEA Consultants, Sept. 1989.

Water Resources of the Blackstone River Basin, MA, Hydrologic Atlas HA-504, U.S. Geological Survey, 1986.

Millbury Source of Supply-Interim Issue Paper, Memorandum to MAWC from G. Naumick and S. Phillips, October 1995.

Letter-Statement of Deficiency for Town Wide Zone II Delineation, Millbury, MA, Massachusetts Department of Environmental Protection to Town of Millbury, February 1993.

1996 Guidelines and Policies for Public Water Systems, Commonwealth of Massachusetts Department of Environmental Protection, Division of Water Supply, Revised August 1996.

Velocity Plots and Capture Zones of Pumping Centers for Ground-Water Investigations, Ground Water, National Water Well Association, Columbus, Ohio, July, 1983.

Groundwater and Wells, 2nd Edition, Fletcher, Driscoll, Johnson Division, St. Paul, MN, 1986.

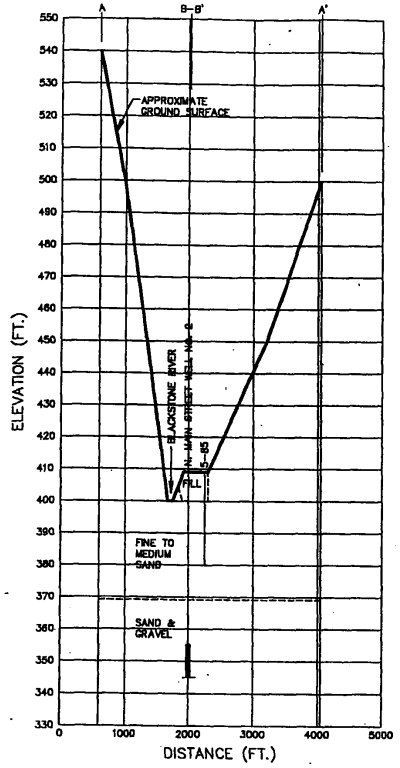
Todd, David, 1980. Groundwater Hydrology, 2nd Edition, John Wiley and Sons, New York.

Walker, Eugene, H. and Krajmas, Bruce, E., 1986. Water Resources of the Blackstone River Basin, Massachusetts. U.S. Geological Survey Hydrologic Atlas HA-682.

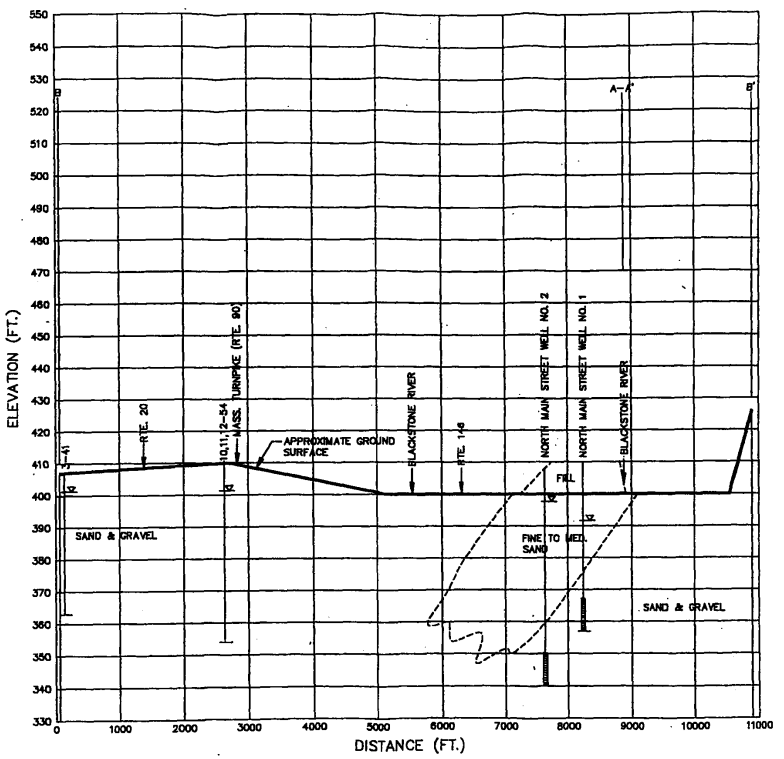
Figure 1. REGIONAL WATER TABLE MAP

Scale: 1" = 2,400'

Groundwater flow directions are indicated by the arrows.
This map also shows the hydrogeologic profile locations.



SECTION A-A'



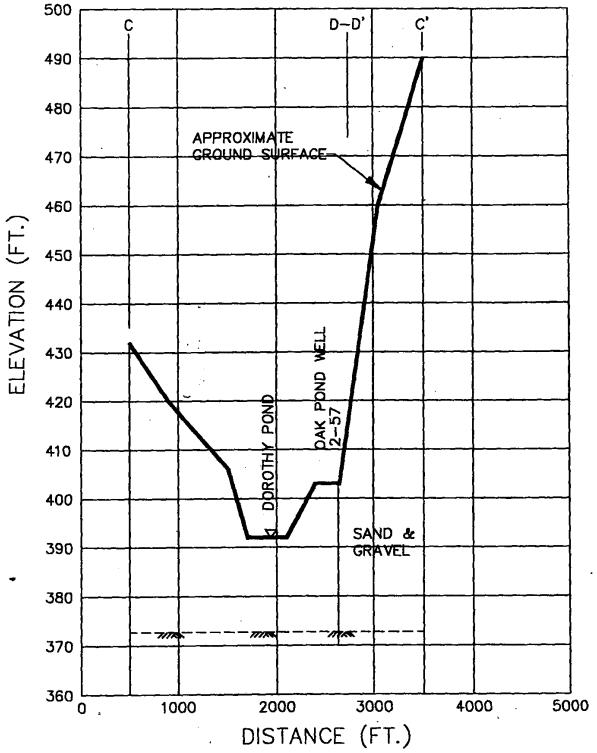
SECTION B-B'

LEGEND

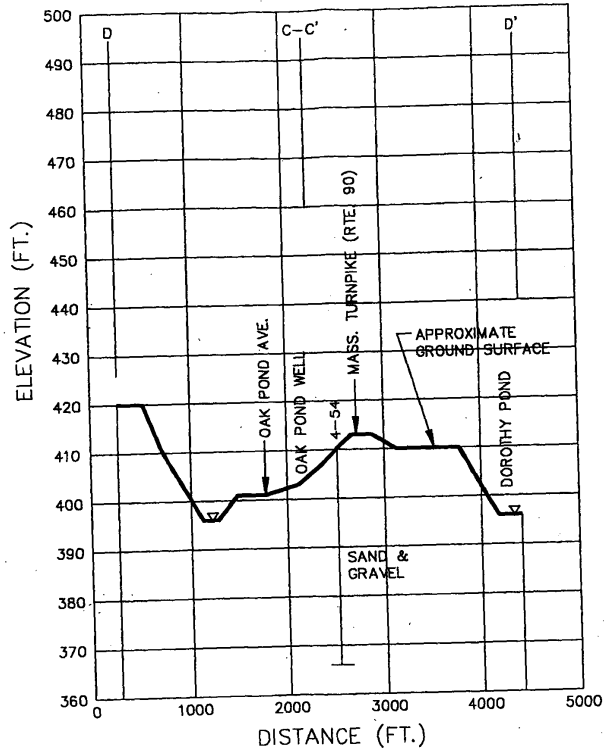
- PROFILE LOCATION
- R REFUSAL (PROBABLE BEDROCK)
- TOP OF BEDROCK
- SCREENED SECTION
- WATER TABLE
- APPROXIMATE LITHOLOGIC CONTACT

TEEM — Talkington Ecker Environmental Managers

FIGURE 2
PROFILES A–A' & B–B'
MASSACHUSETTS AMERICAN WATER CO.
CONCEPTUAL ZONE II DELINEATION



SECTION C-C'



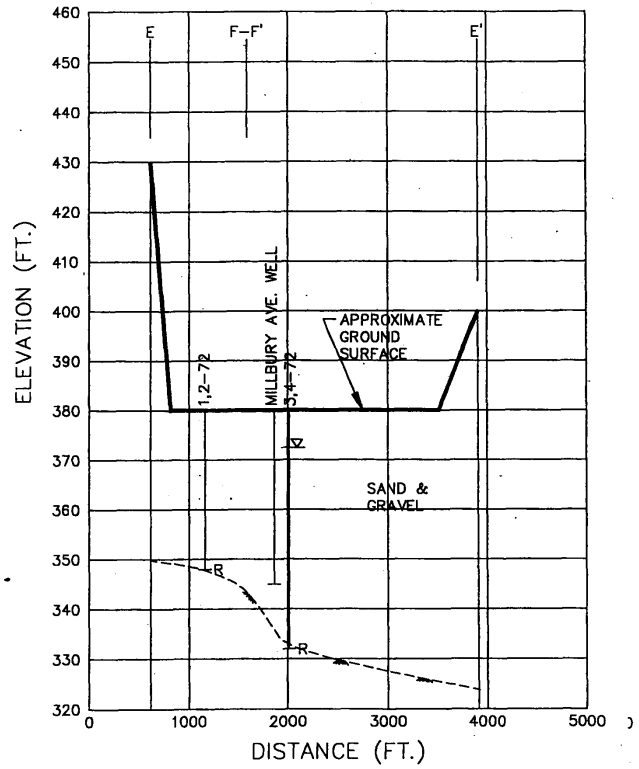
SECTION D-D'

NOTES:
FOR LEGEND SEE FIGURE 2

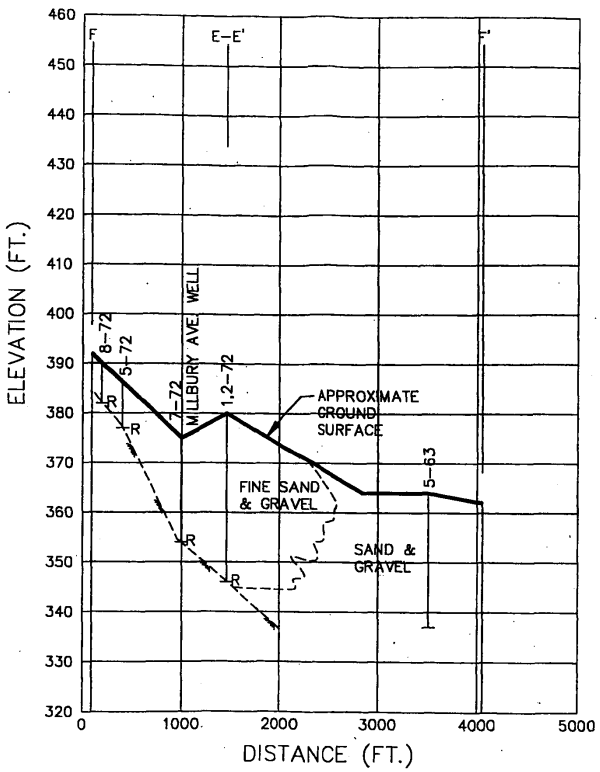
TEEM | Talkington Edson Environmental Management, LLC

FIGURE 3
PROFILES C-C' & D-D'

MASSACHUSETTS AMERICAN WATER COMPANY
CONCEPTUAL ZONE II DELINEATIONS
MILLBURY, MASSACHUSETTS



SECTION E-E'



SECTION F-F'

NOTES:
FOR LEGEND SEE FIGURE 2

TEEM	Talkington Edson Environmental Management, LLC
FIGURE 4 PROFILES E-E' & F-F'	
MASSACHUSETTS AMERICAN WATER COMPANY CONCEPTUAL ZONE II DELINEATIONS MILLBURY, MASSACHUSETTS	

Municipality	Millbury
PWS Identification #	2186000
Name of Water Supply	Main Street Wells 1&2
Water Purveyor	Massachusetts American Water Company
Source Identification #	03G & 04G
Project Proponent	Massachusetts American Water Company
Title of Study/Purpose of Delineation	Conceptual Zone II Delineation for Existing Well
USGS Quadrangle Names	Worcester South
Consultant	Talkington Edson Environmental Management, LLC.
Date of Study Submittal	Revised November 1998
Latitude/Longitude of Source	#1: 042° 11' 54.5" N / 071° 46' 24.7" W #2: 042° 11' 50.7" N / 071° 46' 20.4" W

Signatures: **Date:**

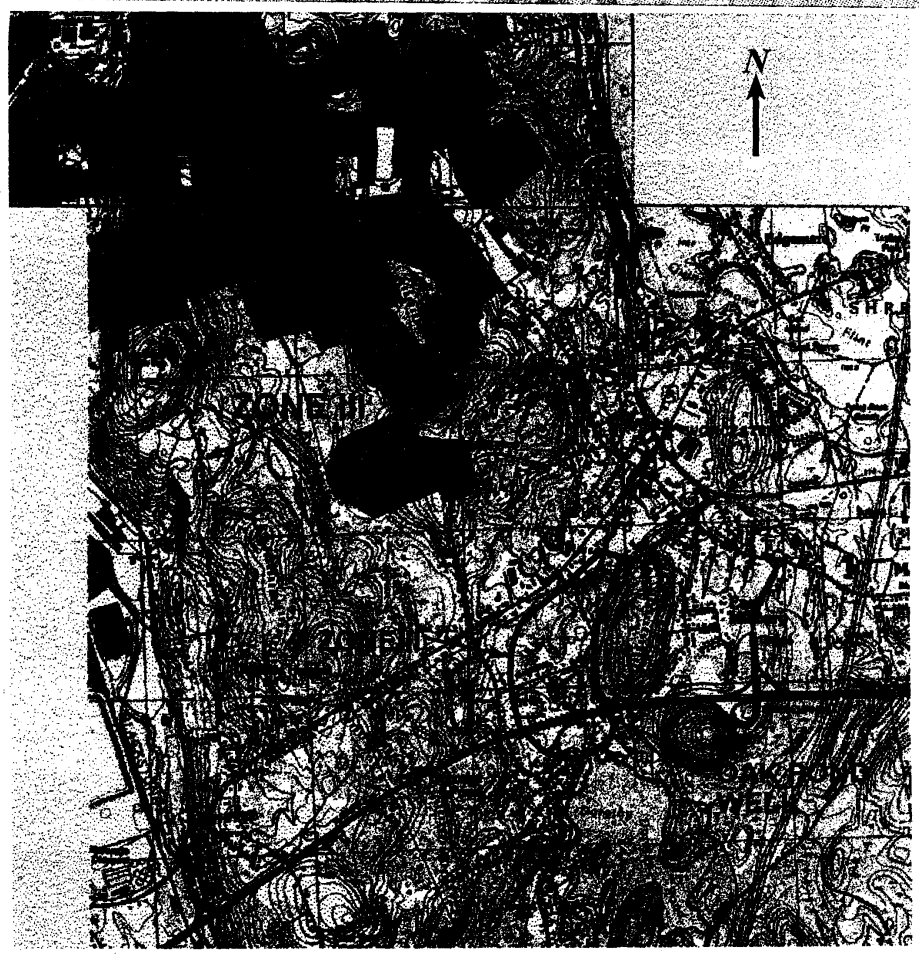
Water Purveyor _____ _____

Consultant _____ _____

Regional Water Supply Chief _____ _____

Scale: 1:25,000 Note: USGS mapping is metric.

Figure 5. CONCEPTUAL ZONE II AND ZONE III DELINEATIONS, NORTH MAIN STREET WELLS



Municipality	Millbury
PWS Identification #	2186000
Name of Water Supply	Oak Pond Well
Water Purveyor	Massachusetts American Water Company
Source Identification #	02G
Project Proponent	Massachusetts American Water Company
Title of Study/Purpose of Delineation	Conceptual Zone II Delineation for Existing Well
USGS Quadrangle Names	Worcester South
Consultant	Talkington Edson Environmental Management, LLC.
Date of Study Submittal	Revised November 1998
Latitude/Longitude of Source	042° 13' 20.7" N / 071° 45' 14.7" W

Signatures: **Date:**

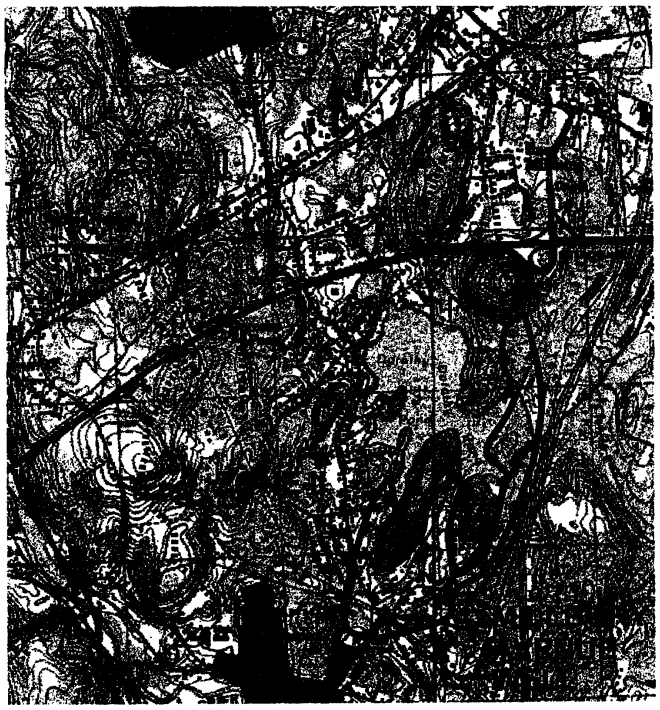
Water Purveyor _____ _____

Consultant _____ _____

Regional Water Supply Chief _____ _____

Scale: 1:25,000 Note: USGS mapping is metric.

Figure 6. CONCEPTUAL ZONE II AND ZONE II DELINEATION, OAK POND WELL



Municipality	Millbury
PWS Identification #	2186000
Name of Water Supply	Millbury Avenue Well
Water Purveyor	Massachusetts American Water Company
Source Identification #	01G
Project Proponent	Massachusetts American Water Company
Title of Study/Purpose of Delineation	Conceptual Zone II Delineation for Existing Well
USGS Quadrangle Names	Worcester South
Consultant	Talkington Edson Environmental Management, LLC.
Date of Study Submittal	Revised November 1998
Latitude/Longitude of Source	042° 12' 01.5" N / 071° 45' 14.9" W

Signatures: **Date:**

Water Purveyor _____ _____

Consultant _____ _____

Regional Water Supply Chief _____ _____

Scale: 1:25,000 Note: USGS mapping is metric.

Figure 7. CONCEPTUAL ZONE II AND ZONE II DELINEATIONS, MILLBURY AVENUE WELL

Figure 8. SURFICIAL GEOLOGY
Scale: 1" = 5,280'

Blue areas indicate unconsolidated deposits favorable for groundwater yields. White areas indicate unconsolidated till, unfavorable for development. Dark blue indicates medium and/or coarse sands and gravel with strong potential for induced infiltration capable of yielding ≥250 gpm. Medium blue indicates finer grained sand and gravel deposits capable of yielding 50 to 250 gpm. Light blue indicates sandy, wetland areas capable of yielding ≤50 gpm. (USGS Hydrologic Investigations Atlas HA-682)

Maximum Pumpage for Millbury Well Stations

1993	
Oak Pond	#1 N. Main
23.368 (May)	25.830 (Aug.)

1997	
Millbury Ave.	#2 N. Main
39.176 (Apr.)	14.225 (Aug.)

YEAR 1

PWS Name: Mass-American Water Compar
City/Town: Millbury
PWS ID#: 2186000

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Drinking Water Program

1997 Public Water Supply Annual Statistical Report

SECTION D: INDIVIDUAL SOURCE STATISTICS

PLEASE MAKE ADDITIONAL COPIES OF THIS PAGE IF YOU HAVE MORE THAN FOUR SOURCES OR WITHDRAWAL POINTS.

PLEASE PROVIDE THE INFORMATION BELOW FOR **ALL** OF YOUR SOURCES (ACTIVE, EMERGENCY, INACTIVE, OR ABANDONED)*

Source Name	Millbury Ave.	Oak Pond	N. Main #1	N. Main #2
Source ID #	2186000-01G	2186000-02G	2186000-03G	2186000-04G
Source Location (Address)	Millbury Avenue	Oak Pond Avenue	N. Main Street	N. Main Street
Source Availability (i.e. ..Active, Emergency, or Inactive)*	Active	Active	Active	Active
Date Last Pump Calibration	11 / 97	11 / 97	11 / 97	11 / 97
Withdraw Units (circle one)**	GAL / (MG)	GAL / (MG)	GAL / (MG)	GAL / (MG)
January	34.560	1.694	8.783	.234
February	31.791	1.508	10.290	.010
March	36.746	.009	9.200	.007
April	39.176	.040	10.885	.063
May	33.237	3.571	15.923	.500
June	17.619	15.747	21.502	1.989
July	14.814	19.586	22.306	7.253
August	6.613	15.197	24.440	14.225
September	3.009	15.340	24.080	13.232
October	4.285	12.568	24.947	13.406
November	2.373	10.690	23.876	13.007
December	7.202	15.467	25.197	2.421
Total # of days pumped ***	312	233	360	182
TOTAL AMOUNT PUMPED	231.425	111.417	221.429	66.347

* The *SOURCE AVAILABILITY* codes have changed from previous years. The following are Proposed Regulatory Definitions and off-set in parenthesis are their former equivalents:

Abandoned Source (formerly: OTHER) means a source that is physically disconnected from a public water system and is no longer maintained as an active, inactive, or emergency source. Abandoned source(s) can not be used as a public water supply source. A source may only be abandoned pursuant to 310 CMR 22.25.

Active Source (formerly: PERMANENT, BACKUP, SEASONAL, PROVISIONAL, INTERIM) means an approved source(s), monitored and maintained to meet 310 CMR 22.00 and used for primary or backup purposes to meet consumer demand as necessary.

Emergency Source (No change from previous) means any source of water used to supplement or temporarily replace a public water system's active or inactive source(s) when water of sufficient quality or quantity is not available. An emergency source may be placed on-line only after the Department's approval pursuant to a declaration of a state of water emergency under M.G.L. c. 21G § 15-17 or as a requirement of a Department administrative order.

Inactive Source (OTHER, CONTAMINATED) means an approved source(s) which is expected to be off-line for at least one year (12 months). A source may be deemed inactive only upon written approval of the Department. An inactive source may not return to active status without written approval from the Department.

* Total amount pumped per month in GAL (gallons) or MG (million gallons).
** Total number of days that a source was used during the year

Annual report of Massachusetts-American Water Company - Millbury Year ended December 31, 19 93

407

PUMPING INFORMATION — Continued.

11. Station log. Oak Pond Station

Year and Month.	Kwhrs. Used.	Pounds of Coal Burned.	MG Gallons of Water Pumped.	Hours of Pumping.		Average Total Static Head.	Average Total Dynamic Head.
January,	1,600		0	0			
February,	3,360		.907	32			
March,	1,440		.080	3			
April,	5,920		2.862	91			
May,	46,880		23.368	734			
June,	45,280		17.274	553			
July,	32,480		15.246	528			
August,	38,400		16.075	622			
September,	43,520		14.366	602			
October,	33,760		12.956	494			
November,	37,600		12.116	450			
December,	10,720		3.289	121			
Totals,	300,960		118.539	4,230			

12. Based upon the displacement of ..... gallons per revolution with ..... per cent allowance for slip.

13. Average gallons pumped per day, 324,764

14. Maximum gallons pumped in a day, 859,000

15. Date of same, 5/16/93

16. Range of pressure in main, 21 lbs. to 125 lbs.

17. Average pressure in mains, 73 lbs. per sq. in.

Annual report of Massachusetts-American Water Company - Millbury 407
Year ended December 31, 19 93

PUMPING INFORMATION — Continued.

11. Station log. N. Main St. Station #1

Year and Month.	Kwhrs. Used.	Pounds of Coal Burned.	MG Gallons of Water Pumped.	Hours of Pumping.		Average Total Static Head.	Average Total Dynamic Head.
January	27,718		19.270	598			
February	22,603		15.800	522			
March	28,591		23.430	667			
April	13,048		6.720	182			
May	16,674		18.490	514			
June	27,184		23.260	683			
July	30,201		25.490	734			
August	29,447		25.830	738			
September	31,967		24.910	705			
October	29,754		25.800	721			
November	28,906		21.860	603			
December	12,147		9.050	219			
Totals	298,240		239.900	6,886			

12. Based upon the displacement of ..... gallons per revolution with ..... per cent allowance for slip.....

13. Average gallons pumped per day..... 657,260

14. Maximum gallons pumped in a day, ... 1,020,000

15. Date of same, ... 5/7/93

16. Range of pressure in main, ... 21 lbs. to ..... 125 lbs.

17. Average pressure in mains, ... 73 lbs. per sq. in.

Post-it® Fax Note 7671	Date 6-11	# of pages ▶
To Amy	From Millbury	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

ATTACHMENT C
Aquarion Water Company Report on Proposed Increase in Capacity of Jacques Wells

PRISM
Environmental, Inc.

April 10, 2002

Mr. Keith W. Bossung, Vice President
Massachusetts-American Water Company
P.O. Box 336
Accord, MA 02018-0336

Re: Increasing the Supply Capacity at Jacques Wellfield, Millbury District

Dear Mr. Bossung:

Prism Environmental, Inc. (Prism) is pleased to provide this report regarding increasing the pumping rates at Jacques Wells #1 and #2. This report documents our contention that the "wet water" is available, and provides our recommendations including the estimated cost.

General Background

Jacques Wells #1 and #2 and located in the flood plain of the Blackstone River in Millbury. Recent production records and testing at the wellfield indicate the potential for increasing the withdrawal from the site subject to regulatory permitting issues addressed below.

Well dimensions presented below are from MAWC records. Additionally, the total well depths were recently field-verified. Recent historic flow volumes and rates for Well #1 have been downgraded by 15.5% based on flow meter testing performed by Prism in February 2002; Well #2 was not operational then and could not be tested.

Basis for Wellfield Pumping Increase

Jacques Well #1

Jacques Well #1 is a 24" x 48" gravel-packed well, 53' deep, with 10' of 24" shutter screen. The static water level is typically about 18' to 20' below floor elevation. The pump setting is unknown.

Our specific capacity analysis is based on operating data for October 14-18, 2001, when both wells were pumped together continuously for five days during a dry period. During that time, 3.56 million gallons were produced from Well #1 (average flow rate of 494 gpm) with a consistent pumping level of 30.9'. The static water level around that time during a non-pumping period was 19.5'. These statistics produce a specific capacity of 43.3 gpm/ft which is consistent with other field measurements for the well.

The available drawdown for Well #1 based on a static water level of 20' and leaving a 5' safety factor above the top of the screen is 18'. Therefore, the current *theoretical* yield for Well #1 is 779 gpm (18' available drawdown times 43.3 gpm/ft specific capacity).

Jacques Well #2

Jacques Well #2 is a 24" x 48" gravel-packed well, 72' deep, with 10' of 24" shutter screen. The static water level is typically about 18 to 20' below floor elevation. The top of the existing pump is 51.5' below floor elevation.

During the October 2001 time period noted above, 1,892,000 gallons were produced (average flow rate of 263 gpm) with a consistent pumping level of 25.6'. The static water level around that time during a non-pumping period was 19.8'. These statistics produce a specific capacity of 45 gpm/ft which is consistent with other historic values for the well.

The available drawdown for Well #2 based on a static water level of 20' and leaving a 5' safety factor above the top of the screen is 37'. Therefore, the current *theoretical* yield for Well #2 is 1,665 gpm (37' available drawdown times 45 gpm/ft specific capacity).

Analysis and Conclusions

Based on available drawdowns and calculated specific capacities, the combined *theoretical* discharge from both wells is about 2,400 gpm. This includes an allowance for well interference since the specific capacities were measured during extended pumping of both wells together. However, it does not take into account the fact that Well #1 is shallower than Well #2 and could be dewatered by interference with Well #2.

We believe that the wellfield can produce more water if equipped with larger pumps set lower in the wells. If necessary, satellite wells could be added to maintain higher pumping rates. We also suggest that the larger pumps be equipped with variable frequency drives (VFDs) to provide operator flexibility, increased energy efficiency and to avoid over-pumping the wells when each is pumped individually.

In November and December 2001, the average daily demand of the system was 1.72 and 1.74 mgd, respectively. During this drought period, the Millbury Avenue and Oak Pond Wells were almost non-productive, and water purchases from the City of Worcester averaged 0.82 and 0.62 mgd, respectively. If the Jacques wellfield could have produced 1,200 gpm (1.73 mgd) during that period, no purchases would have been needed. (This conclusion presumes that hydraulic control issues at the Wheelabrator connection are addressed.)

We have also analyzed the maximum day demand in 2001 of 2.85 mgd occurring on July 24. If the Jacques wellfield were to produce 1,200 gpm along with the Millbury Avenue Well at 1,000 gpm and Oak Pond Well at 500 gpm, then the total system supply of 3.85 mgd exceeds the 2001 maximum day demand by 1 mgd. A more detailed evaluation of supply and demand conditions in Millbury has been outside of the scope of work that we have performed to date.

Permitting Issues

MAWC's existing Water Management Act permit for Millbury stipulates a current total system withdrawal limit of 1.96 mgd, and daily withdrawal limits for the Jacques wells as follows:

Daily withdrawal limit for Jacques Well #1 = 600 gpm

Daily withdrawal limit for Jacques Well #2 = 350 gpm

Since the permit was issued, DEP has approved the Zone IIs for these wells at the following pumping rates:

Zone II Delineated at Well #1 at 583 gpm

Zone II Delineated at Well #2 at 319 gpm

for a combined wellfield Zone II pumping rate of 902 gpm.

Any proposed increase in withdrawal rates to the figures shown above would likely require a Water Management Act permit modification and, possibly, a re-delineation of the Zone II for the wellfield. We suggest that these issues be discussed with DEP as soon as possible.

Recommended Improvements

The Jacques wellfield production facilities were inspected by Prism with our electrical engineer to develop the recommended improvement program. These improvements include:

- Increase the outputs of the wells to achieve a combined wellfield output of 1,200 gpm. We anticipate that Well #2 would be designed to produce more than Well #1 (perhaps a 60%/40% split). The resulting increases to flow rate and discharge pressure will require the installation of upsized pumps and motors in the range of 75 to100 Hp to be determined during design.

- VFDs should be installed with the new pumps. Pump speed would either be controlled manually with the VFD or set to maintain a constant flow rate under the varying discharge pressure conditions. (We note that the existing chemical feed systems are constant speed rather than paced with flow.)

- Remove the Parco valves from Wells #1 and #2. These valves have historically required significant operator attention and maintenance and are not required following the installation of the VFDs.

- Much of the existing electrical equipment at Wells #1 and #2 is original equipment dating to 1966 when the wells and pump stations were constructed. Much of this equipment (electrical service, panel boxes, voltage transforms, wiring, etc.) is near the end of its design life and should be replaced to comply with the current electric codes.

- Install a well level indicator in each well to monitor well level and shut down the pump if the water level drops below a low level set point.

Estimated Project Cost

Table 1 presents a breakdown of the estimated project cost for the recommended improvements presented above.

Table 1
Jacques Wellfield Improvements
Estimated Project Cost

Furnish and install two new vertical turbine pumps and columns retaining the existing Byron Jackson pump heads	$51,000
Furnish and install two 75-100 Hp VFDs	$42,000
Upgrade electrical service and wiring	$35,000
Instrumentation and Controls	$14,000
Construction Sub-total	**$142,000**
Construction Contingency (15%)	$21,000
Design & Construction Phase Engineering	$22,000
Estimated Total Project Cost	***$185,000***

We believe that the investment noted above to increase the capacity of the Jacques Wellfield to 1,200 gpm will provide MAWC with approximately 450 to 500 gpm of additional supply. Based on our analysis of 2001 operating data, this additional supply should greatly decrease the need for future outside water purchases and provide excess capacity for meeting peak system demands. We emphasize that the permitting issues must be addressed with DEP prior to proceeding with the recommended improvements.

Prism Environmental, Inc. appreciates the opportunity to provide professional engineering services to the Massachusetts-American Water Company, and we would be pleased to discuss this matter further at your convenience.

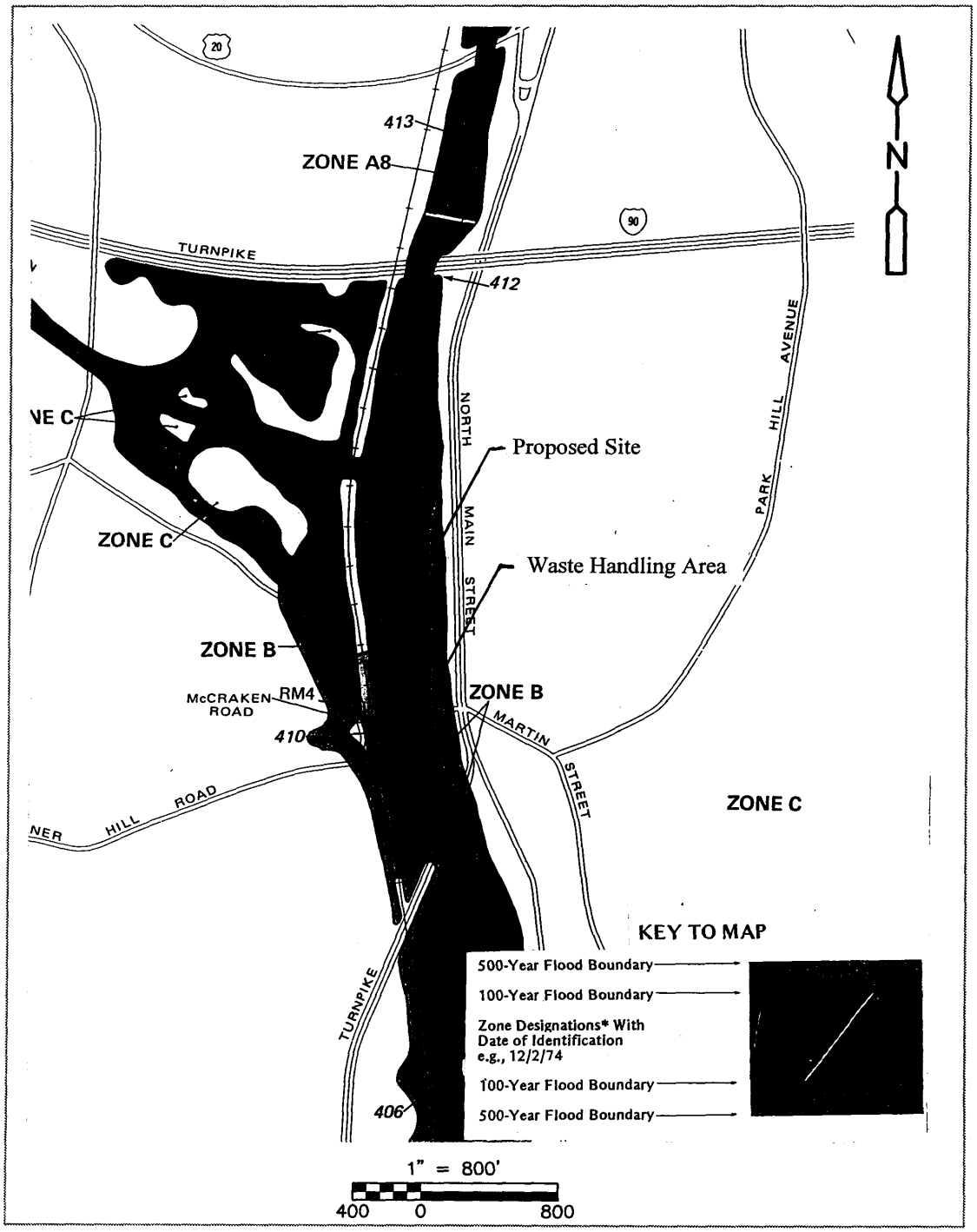
Sincerely,

David F. Edson, P.E.
President

C: E. Commane, M. Dana

PRISM

ATTACHMENT D
Figure Indicating Location of Proposed Facility in Relation to Floodplain

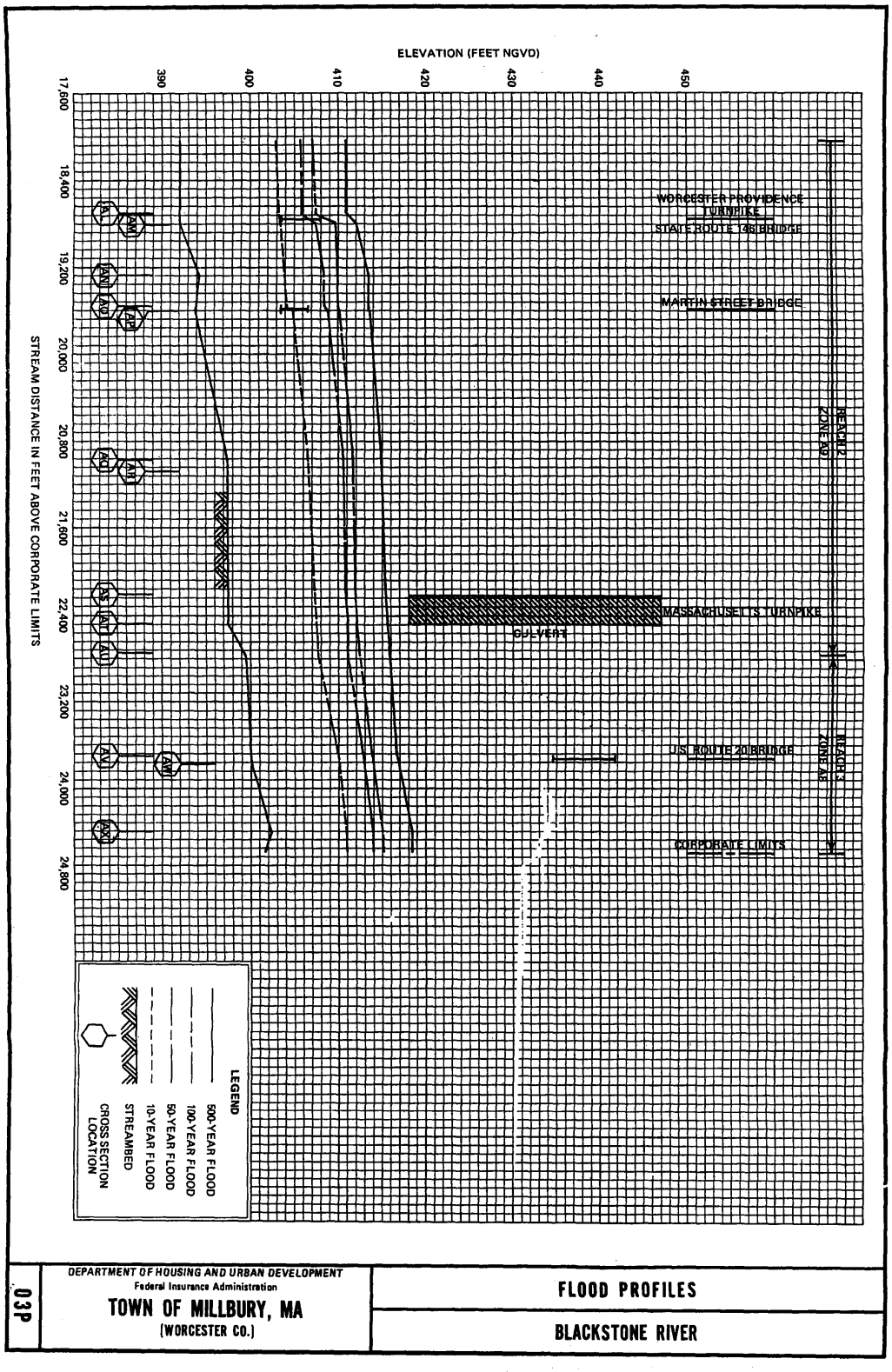


TOWN OF MILLBURY

TRANSLOAD FACILITY REVIEW

CDM

DECEMBER 2002



03P	DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Federal Insurance Administration **TOWN OF MILLBURY, MA** (WORCESTER CO.)	**FLOOD PROFILES** **BLACKSTONE RIVER**

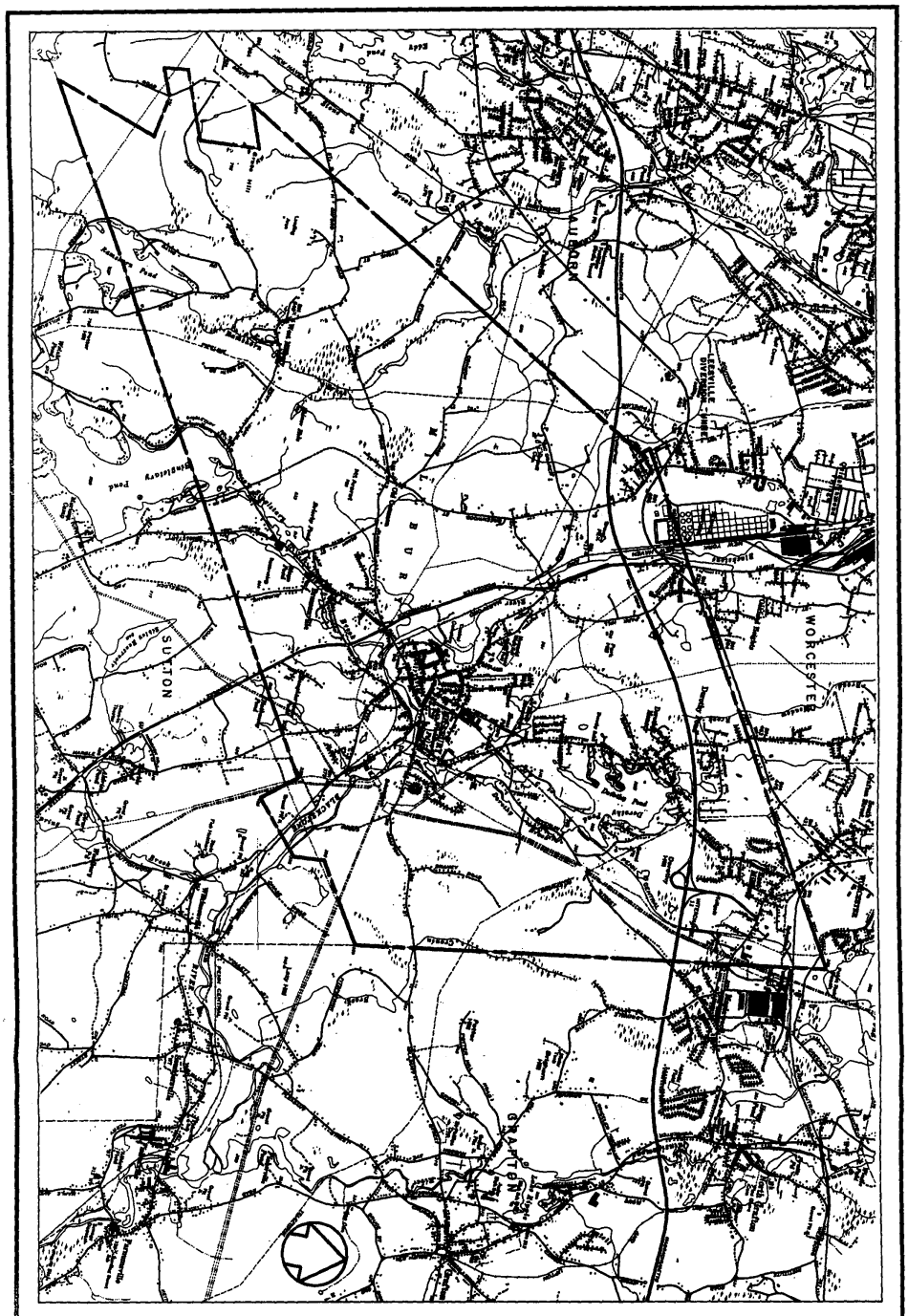


FIGURE 1

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWN OF MILLBURY, MA
(WORCESTER CO.)

APPROXIMATE SCALE
0 3200 6400 9600 12,800 FEET

VICINITY MAP

5.3 Flood Insurance Zones

After the determination of reaches and their respective Flood Hazard Factors, the entire incorporated area of the Town of Millbury was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or Flood Hazard Factors determined.
Zones A1-A6, A8, and A9:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to Flood Hazard Factors.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding.

The flood elevation differences, Flood Hazard Factors, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community are summarized in Table 4.

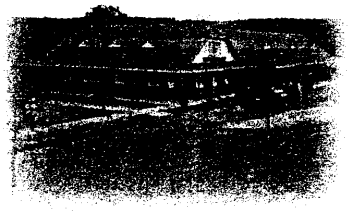
5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Town of Millbury is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the Federal Insurance Administration.

ATTACHMENT E
Excerpts from Town of Millbury's Master Plan

Town of Millbury

Master Plan



1998

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MAJOR RECOMMENDATIONS

Protect and Enhance Open Space and Natural Resources:
A very important feature of this Master Plan is the open space and recreation element that proposes to protect and enhance important environmental assets in the town, including views, the Blackstone River, pathways and other recreational facilities. It is notable because the open space and recreational features will provide a structure that will help define and support other land uses, and that will increase recreational opportunities for residents. The plan also proposes to utilize some of the more than 1000 acres of land devoted to power transmission lines. These lines which pass through Millbury in an unusually dense pattern have substantial open space value. They may be used for such features as linear borders for residential, industrial and commercial land uses, wildlife corridors and trails and paths for walking, skiing, and bicycling, and parking for adjacent land uses. While Chapter 13 of the Master Plan includes recommendations for protecting and enhancing Millbury's open spaces and natural resources, additional information is contained "Millbury's Open Space and Recreation Plan," a companion report produced in conjunction with this Master Plan.

West Millbury should remain essentially open and rural in character. To accomplish this several changes in zoning are proposed, including larger lots, increased building setbacks from the road, and site plan review that encourages buildings to be placed in wooded, not open areas.

Preserve Character of Villages:
Village preservation is strongly recommended. Protection of the many villages within the Town was expressed as a very desirable goal by many people who participated in plan development. To accomplish village preservation, creation of historic districts and neighborhood preservation districts is proposed. Village overlay zoning should also be implemented to recognize features needed to maintain village development, such as smaller building setbacks and mixed residential/commercial land uses.

Increase Population Around Millbury Center:
Another important feature of the Master Plan is its recommendation for increased population densities around Millbury Center, and to direct new lower-density development to areas in east and central Millbury that have adequate roads, water and sewer, and suitable soils for residential development. More population close to the town center will help retain businesses there, and provide convenient residential locations for older age groups, an increasing segment of Millbury's residents.

Promote Commercial Development in Appropriate Locations:
The strategy to promote desirable development along the Route 146 corridor, and especially near its intersection with the Massachusetts Turnpike, is to create smaller mixed-use commercial village areas in designated suitable locations near the river, and to create a larger business park on the west side of Route 146. Because the

Blackstone River shares this corridor, it is recommended that sites for commercial development utilize river views and access in their design and layout as much as possible, while also preserving river access for scenic and recreational purposes where appropriate. A bikepath will provide access to areas along the river. Site planning for new mixed-use commercial developments should incorporate the bike path as well as the river.

At both ends of Route 146, on the Worcester and Sutton borders, gateway developments are proposed which reflect the village character of Millbury. Small mixed commercial and lodging areas built in a clustered village style should be created in these areas.

Expand and Improve Some Services, Infrastructure, and Community Facilities:
Millbury's master planning is based on a population projection of about 15,000 people by the year 2020, possibly growing to 16,000 by 2030. Some new and expanded town services will be needed by these dates. New school classroom space will be required between 2000 and 2005. A year-round recreation center should be built. Sewer line extensions to new developments in the Riverlin Street and Grafton Street area and along Route 146 should also continue. The Town Library should also be expanded to meet growing needs of existing and new residents, and changing information technology.

2. GOALS AND OBJECTIVES

Numerous community meetings were held during the Fall and Winter of 1996-1997 to define and discuss a set of goals for the master plan. The function of these goals is to provide guidance for policies and implementation programs. The goal-setting process included several exercises and reviews, and was as inclusive as possible. The set of goals that emerged from this process are listed below and further explained in this section. A graphic illustration of them is shown on Map 1.

In the meetings ideas were requested from town residents and business people. Several exercises were done to elicit ideas and gain a sense of priorities about goals for the master plan. Staff work was done to reduce any overlap or redundancy, and to ensure that all relevant topics were covered. Finally, statements of goals, as refined, were submitted to meeting participants for a last review to ensure that the goals accurately reflected the views of participants.

Goals and Objectives

- Preserve rural character
- Preserve and strengthen existing village character
- Improve roadways, access and transportation
- Broaden the tax base
- Improve, maintain, enhance the water and sewage infrastructure
- Protect historically significant areas and sites
- Preserve, protect, and expand open space
- Enhance, improve and maintain recreational facilities
- Promote the compatibility of land uses

Definition of Goals and Objectives

Preserve the rural character

A prominent goal is the desire to preserve Millbury's essential character, which includes its rural landscapes, scenic river views and historic mill town tradition. Concerns exist about how the development impacts associated with the Route 146/MassPike Interchange might contribute to the degradation of Town character. It is felt by many that the interchange will promote the development of unwanted strip malls and unsightly industrial uses. There is a need to guide this growth in such a way that will contribute to the preservation of Millbury's character. Also, the potential of the Blackstone River as an asset in shaping the Town's character should be addressed.

Preserve and strengthen existing village character

Millbury contains several small village areas centered on small-scale commercial and industrial activities. It is desirable to retain the character and individual identities of these villages. Any new development in these villages should be in keeping with the scale and use of land of existing development. Environmental features, such as streams, ponds, hills and vistas that help define the villages, should be preserved to the extent practicable, in their natural or traditional conditions.

Improve roadways, access and transportation

Traffic is viewed as a potential problem. The completion of the Rt. 146/MassPike interchange will undoubtedly lead to increased traffic volumes along Route 146 and parallel roadways leading towards the center of Town. It will be imperative to accommodate this traffic increase through proper road maintenance and expansion. Providing access to Rt. 146 from connecting roadways by creating safe and efficient intersections is essential. Also, the existence within the Town of intersections with poor sight lines (e.g., forking roadways, hills, overgrown vegetation) poses a potential safety problem.

The Town's need for public transportation should be considered. The impacts on surrounding traffic patterns from a potential commuter rail station in northeastern Millbury is a concern. Also, the Town's need for public bus service by means of Worcester should be reviewed by the Town and the Regional Transit Authority.

Broaden the tax base

Encouragement of new industrial and commercial development within the Town could provide a means for accomplishing this. By encouraging such growth, new revenues could be generated which could improve the level of municipal services, as well as reduce the relative residential tax burden. Any potential growth should be viewed in light of goals aimed at preserving character.

Improve, maintain, and enhance the water and sewage infrastructure

Because Millbury relies on ground-water for this purpose, the Town must effectively manage and protect this resource. The aquifer system which underlies much of Millbury is particularly susceptible to a wide variety of human-induced sources of contamination. For this reason, it is especially important that steps be taken to ensure that overall ground water quality be maintained within acceptable drinking water standards as determined by local, state and federal agencies.

Maintenance of the Town sewerage system is equally important. By insuring a safe and efficient system of wastewater disposal within the Town, the potential for such pollutants to enter and contaminate the water supply would be decreased. The emerging policy in Millbury calls for new residential development to be connected to sewer service. Expansion of sewer lines to serve

areas suited to industrial development would further enhance the Town's ability to attract new industry, while ensuring safe and efficient wastewater disposal.

Protect historically significant areas and sites
Preservation of important historical areas and sites is a concern to many Town residents. Establishing historic districts and protecting valuable structures can help enhance Town character. Preserving historical sites can also increase tourism and foster economic development. Coordinating Town preservation efforts with those associated with the Blackstone River National Heritage Corridor is vital to meeting this goal.

Preserve, protect and expand the open space
The Town continues to lose tracts of open space as residential and commercial development persists. Preservation of open space can help to maintain the "rural feel" of Millbury. This is of special concern as the completion of the Route 146/ MassPike interchange will impose more development pressure. Views of, and access to, the Blackstone River should be opened up where possible.

Enhance, improve and maintain recreational facilities
Maintaining existing facilities and developing new areas for recreational usage is important, as it has been determined that many of the Town's current recreation facilities are overused. Town coordination with the recreation objectives of the Blackstone River National Heritage Corridor is one way to help achieve this goal. Development of the Blackstone River and its banks for boating, canoeing, biking and hiking has been suggested.

Promote compatibility of land uses
As development pressures increase, there will be a need to site new development in a way that complements the existing settlement patterns of Millbury. Residential and agricultural land uses should be buffered from the potential expansion of industrial and commercial lands. Also, lands adjacent to power lines should be considered for lower density development in order to lessen aesthetic impacts and reduce exposure to possible health hazards. Policy must be formulated which recognizes the increasing complexities and conflicts concerning land use.

General Discussion of Goals and Objectives

Development Concerns

In discussions of goals and objectives the most frequently mentioned threat to the Town focuses around the increased development pressures facing Millbury. Concerns were articulated in three main categories. First, residents are concerned about the area along Route 146 between the MassPike and the Center of Millbury, as well as the area along North Main Street between Route 146 and the Center. With the completion of the MassPike/Route 146 interchange fast approaching, these areas appears to be under threat of commercial over-development; it is feared that commercial development will overwhelm the landscape of these areas with strip malls and unsightly commercialization. Secondly, increased traffic along Route 146 and connecting roads due to the new MassPike exit worried residents. Already high traffic volumes on these roads may become worse, residents feared. Finally, residential over-development in the more rural sections of West and Southeast Millbury was thought of as a potential problem. The residents feared that valuable natural resources may become overwhelmed due to the unchecked development sprawl. In particular, Riverlin Street, and Grafton Street in Southeast Millbury were viewed as susceptible to development pressures.

Historic Preservation

The residents of Millbury have a sizable interest in preserving the structures in town which posses historic significance. Of particular importance to residents is the rehabilitation of the old mill complexes in town. The Felter's Mill and Windle Mill complexes on the Blackstone River as well as the Bramanville Mill village on West Main Street were mentioned as important historical areas. Significant residential structures that should be preserved include the Asa Waters Mansion and the Torrey House.

Natural Resources

The water resources of Millbury, including the Blackstone River and the many lakes and ponds were viewed, by residents, as the most important natural resources. In particular, the Blackstone River and Lake Singletary were mentioned as providing residents with excellent scenery and recreational opportunities. The town's other streams and ponds were also considered valuable natural resources, certainly worth preserving and enhancing.

Places to Visit

Among the locations identified by residents as favorite places visit in the Town of Millbury, the Asa Waters Mansion, the mills and the lake and ponds were mentioned most frequently.

Views

Millbury appears to provide many opportunities to enjoy the natural scenery. Residents supplied many examples of views which enable both the pedestrian and driver to enjoy the landscapes around Town. Walkers identified the downtown area as a frequented destination. Also, the roads of West Millbury, including areas along West Main and Greenwood Streets provide many opportunities for enjoyable walks and scenic views. The Clearview Country Club and the bridges crossing the Blackstone River were cited numerous times for their scenic opportunities.

Those who enjoyed driving around Millbury expressed their pleasure in the beautiful vistas found while driving in West Millbury. Greenwood, McCraken, Carleton and Auburn roads were identified for the beauty of the rolling hills and farmland which surround these roadways. Similarly, Stowe, Stone and North and South Oxford Roads were identified as places where there are important views of farmland, forests and hills. Also, the Riverlin Street area in Southeast Millbury provide a similar rural atmosphere.

3. NATURAL RESOURCES

Millbury is fortunate to have a remarkable diversity of natural resources that significantly contribute to its desirability as a place to live and work. The Blackstone River and its tributaries form valleys between rolling hills. Residents value the traditional mixed use character of the historic mill villages and their proximity to natural areas, farm fields, and forests on the surrounding hills. Much of the visual character of these rural hillsides is provided by private undeveloped land that has little or no long-term protection as open space. Many of these areas have been too expensive to develop because of soil conditions, but as pressures for new building sites grow, some of these important natural areas are sure to come under more intense development pressure.

Geology

Millbury's surficial geology is largely the result of the glaciers that covered the area several times with a mile thick layer of ice. The last glacier retreated about 15,000 years ago. Alluvium, deposits laid down by flowing water, occur on either side of the Blackstone River. A combination of materials left by melting ice and "ice contact till" occur around Dorothy Pond, while the majority of the remainder of Millbury is covered with glacial till, the unsorted mixture of clay, sand, and broken rock, that was pushed along by the advancing ice layer. The prevailing rock, both ledge outcrops and boulders, is gneiss. Some features contributing to the town's geologic character are:

- Mount Ararat, a bedrock peak or monadnock, which rises about 215 feet above Brierly Pond at its base. It provides dramatic views from its rocky summit.
- A few boulders and many fragments of compact, soft textured soapstone, once used by native Americans to fashion tools and utensils, have been found in different parts of the town.
- Three drumlins (elongated hills of clay and glacial till) occur, including Prospect Hill and the two northeast/southwest running hills that mark the southern border of Dorothy Pond.
- The Blackstone River and its tributary streams, Broad Meadow Brook, Dorothy Brook, Singletary Brook, and Ramshorn Brook.
- The rolling hills including Grass Hill in West Millbury, Park Hill, and Dorothy Hill.
- The ponds including Ramshorn Pond, Singletary Pond (Lake), Shiner Hole, Brierly Pond, the Howe Reservoirs, Slaughterhouse Pond, Hathaway Pond, Woolshop Pond, and Dorothy Pond.

Blackstone River

The Blackstone River, its tributaries, and the town's ponds are the most significant surface water features. As mills were built along the river and villages were developed, untreated sewage, detergents, solvents, heavy metals and other industrial wastes were disposed of in its waters. The Blackstone River became known as one of the nation's most polluted rivers. Anti-pollution laws and the construction of waste water treatment plans have improved the water quality of the river in recent years, but more must still be done. As development continues, polluted runoff from built-up areas will increase. The loss of wetlands and vegetated buffer zones along the river in the past has reduced the capacity of these natural systems to purify the water. These factors and remaining unknown sources of pollution diminishes the river's wildlife and scenic values. Designation of the Blackstone River Valley as a National Heritage Corridor has done much to focus attention on improving water quality and underlining the recreational and economic development opportunities offered by the river and its tributaries.

Wildlife

Millbury's forest covered hills, open fields and cropland, pastures, marshes, and forested wetlands provide a diversity of habitats for wildlife. The nearby Massachusetts Audubon Society's Broad Meadow Brook Wildlife Sanctuary in Worcester has many similar habitats and has kept records of its flora and fauna. One hundred sixty four species of birds; twenty three species of mammals; five species of salamanders and newts; six species of frogs and toads; three species of turtles; four species of snakes; seventy two species of butterflies and skippers; and five hundred forty nine species of plants have been recorded at the sanctuary. Millbury's much larger area and greater diversity of habitats would be sure to have an even more diverse flora and fauna than the relatively small sanctuary. Some of the highlights of the sanctuary's wildlife are listed below:

Mammals	Frogs and Toads	Salamanders and Newts
White-tailed Deer	Wood Frog	Spotted Salamander
Short-tailed Weasel	Green Frog	Red-backed Salamander
Mink	Bull Frog	Dusky Salamander
Red Fox	Spring Peeper	Two-lined Salamander
Coyote	Gray Tree Frog	Red-spotted Newt
Cottontail Rabbit	American Toad	
Opossum		
Raccoon	**Turtles**	**Snakes**
Skunk	Snapping Turtle	Black Racer
Muskrat	Painted Turtle	Garter Snake
Little Brown Bat	Spotted Turtle	Northern Water Snake
Big Brown Bat		Ring-necked Snake

Birds

Common Loon	Turkey Vulture	Black-billed Cuckoo
American Bittern	Osprey	Great Horned Owl
Great Blue Heron	Bald Eagle	Common Nighthawk
Green Heron	Red-tailed Hawk	Belted Kingfisher
Wood Duck	Virginia Rail	Red-bellied Woodpecker
Green-winged Teal	American Woodcock	Willow Flycatcher
Eastern Bluebird	Wood Thrush	Red-eyed Vireo
Blackpoll Warbler	American Redstart	Yellow-rumped Warbler
Scarlet Tanager	Rose-breasted Grosbeak	White-throated Sparrow

Note: Some of these are the larger but less commonly seen birds. There are of course the more commonly seen chicadees, sparrows, wrens, robins, bluejays, cardinals, finches, crows, blackbirds, ravens, orioles, etc.

A greater diversity of butterflies and skippers have been found at Broad Meadow Brook than at any other Massachusetts Audubon Sanctuary. The sanctuary has a major electric power transmission line running through it and a majority of butterfly and skipper species have been found along this right-of-way. Transmission line rights-of-way have a diversity of plants that are food supplies for these colorful insects. Millbury's extensive transmission line rights-of-way are also likely to have a large diversity of butterflies and skippers.

According to the Massachusetts Natural Heritage Program, Millbury has one record of a state-listed rare wetland species in the southeastern portion of town on the Grafton border.

Millbury's wealth of natural resources has always been an important factor in its development. The Blackstone River played a pivotal role in the town's early growth as an industrial center and residents often mention preserving the town's rural character, represented by its rolling hills, as an important goal. These natural areas and their wildlife are enjoyed by many residents who walk the trails in some of the town's protected conservation land and they are appreciated by everyone as they travel about the town and view its forested hillsides, ponds, and rivers.

The following maps depict the topography, soil types, soil permeability, suitability of soils for agriculture, and overall development limitations of Millbury's natural environment.

Topography

There are many rolling hills and valleys in the town and relatively few areas which are flat (See Map 2). Because landform is a primary consideration in the development process, areas where there are steep slopes (over 8%), impede site

Future Commercial Development

The current trend to develop new or relocated businesses along Canal Street and Providence Road will probably continue. This area has some vacant land and it is convenient for traffic from Grafton and Sutton. It will be important to assure that good site planning and design occurs in the properties to be developed in this area. Such features as sidewalks, landscaping, integration of bikepath facilities, parking to the side and rear, maintaining or opening up river views, and appropriate building facades should be encouraged in site plan review.

Any opportunity to create river views and river access should be encouraged. These include redevelopment of industrial structures along the river, such as those on the extensive Felters Co. site, the Windle Industries mill building on Canal Street, and the building in which Van-Go Graphics is located off of South Main Street. The river comes closest to commercial activities in Millbury Center, south of Elm Street, east of South Main Street and Canal Street.

Businesses that have parking behind the buildings in these areas should open up entrances to the river from their parking areas. The parking areas should be planted with appropriate vegetation and clearly marked designated walkways should be established.

If the Felters property is to be redeveloped for retail and services, it most likely will need to contain a mix of businesses and services in order to attract and retain future tenants. Its location three blocks north of the main commercial area requires strong attraction values for people to walk to it. To attract motorists, they will need to be a critical mass and variety of shopping and service establishment opportunities to attract them. One larger operation such as a discount retailer would help to anchor the complex. Indeed, small shops and eating and drinking establishments which take advantage of river views would add to the attractiveness of the development. Incorporation of the bikepath would also aid in attracting businesses, since studies have shown that multi-use trail-goers spend approximately $7-$10 per day at stores in the vicinity of trails during weekends and summer days.

An overall streetscape and building facade plan should be developed for the downtown. There are several elements that are in place, such as small parks and landscaped areas. These need to be integrated into an overall design that emphasizes gathering places and draws pedestrian traffic into retail areas. Key development and redevelopment parcels should be identified in such a plan, and the historic characteristics of buildings and sites should be emphasized and integrated into a design theme. To date, Millbury Center has relied primarily on its crossroads location for its economic health. Increasingly it will need to rely on creating a unique sense of place where people want to come and gather and shop. Fortunately, Millbury has several assets that can be used to increase its sense of place, including the Blackstone River and historic buildings.

6. LAND USE AND ZONING

Existing Conditions, Zoning, and Recommendations*

Two-thirds of Millbury's land is undeveloped. This is especially the case in West Millbury where most of the land is in large parcels and where there are a number of active farms and orchards. There are also large undeveloped parcels of land in the eastern and southern parts of Millbury along the Grafton and Sutton town lines. Most of Millbury's development is on a southwest-to-northeast axis that follows Wheelock Avenue, Millbury Avenue, Howe Avenue from the northeast, through Millbury Center, and southwest along West Main Street and Sutton Road. This major axis is crossed by a secondary development axis that extends southeast and northwest along Grafton Street and Providence Road from the southeast through Millbury Center, and northwest along North Main Street.

Table 6 shows acreages of land according to each land use category shown on Map 10. Data for 1985 and 1997 are indicated. The major increases in acreage

Table 6
Land Use in Millbury: 1985 and 1997

Land Use Category	1985 Acreage	1997 Acreage	% Change
Cropland	452	448	-0.9
Pasture	233	233	0
Forest	5587	5197	-7.0
Wetland	220	199	-9.6
Orchards or Nurseries	82	82	0
Mining or Sand or Gravel Pits	15	15	0
Other Open Land	499	462	-7.4
Urban Open Land	120	108	-10.0
Recreation (Fields or Courts)	93	93	0
Recreation (Spectator)	61	42	-31.2
Recreation (Water Based)	1	1	0
Residential (Multi-Family)	44	44	0
Residential (Less than 1/4 Acre)	257	257	0
Residential (1/4 to 1/2 Acre)	1251	1463	17.0
Residential (Larger than 1/2 Acre)	603	603	0
Commercial	146	201	37.7
Industrial	126	291	131.0
Transportation	161	212	31.7
Waste Disposal	62	62	0
Water	390	390	0
Total	10,403	10,403	

Source: 1985 Mass. GIS Land Use taken from the McConnell UMass. Survey
1997 Updates to the 1985 Map based on Millbury Planning Department Data

* Note: Please refer to the following three maps which relate to this section: Map 10, 1995 Land Use; Map 11, Existing Zoning; and Map 12, Land Use Recommendations.

have been in industrial (+164 acres) and residential (+211 acres) land. The Wheelabrator Resource Recovery Plant between Route 20 and the Massachusetts Turnpike is the major private development that has occurred recently. It occupies a 13.3 acre site and returns about $1 million in taxes to the town each year.

Commercial land uses tend to be concentrated in Millbury Center. There are concentrations of commercial land use along North Main Street, Route 122A, Route 20, and in Bramanville. There are isolated commercial establishments at the intersection of Millbury and Wheelock Avenues, and along Route 146. These areas should be kept approximately the same size, with new development primarily limited to neighborhood retail establishments and services.

The intersection of Route 146 and the Massachusetts Turnpike, when it is open in 1999, is expected to attract more commercial and industrial uses. It is recommended that this area be developed as compact commercial villages. Mixed uses, including retail, office, lodging and conference facilities, would be desirable for several of these villages. All of these developments should include open space, river access and overlooks, and be designed in a manner that reflects the village and rural character of the town.

With respect to the Route 146 area, the Town's zoning bylaws includes a Route 146 Highway Corridor Overlay District. The intent of the provision is to create nodes of related and supportive activities so that commercial development in the district will be compatible with each other, and will be functionally and visually superior to the sprawl-like development often found along the region's major roads. Requirements governing landscaping, pedestrian facilities, signage and utilities are contained in the provisions. Both the Route 146 Overlay District and Open Space Community provisions subject developments to the site plan review process and the necessity of obtaining a special permit.

Residential land uses in Millbury are moderate to low density. Low density development (lots of 1/2 acre or larger) accounts for 28% of the residential land. The older sections of town, including sections along the Worcester city line, around Dorothy Pond, and in Millbury Center and Bramanville, have moderate density housing on lots between 1/4 and 1/2 acre lots. These account for 58% of total residential land uses. There are some multi-family units in Millbury Center, accounting for 2% of residential land. Older development tends to be located along arterial roads. Newer development tends to be contained in subdivisions.

Much of Millbury's open land is concentrated in West Millbury, and it is where the rural character of the town is most evident. West Millbury is zoned Suburban I, Millbury's most restrictive lowest density residential zone. Residential building lots 60,000 sq. ft. in size are required, unless public water is available, in which case, 50,000 sq. ft. lots are permitted. Moreover, this minimum lot size is reduced once again to 40,000 sq. ft. if both public water and sewer are available.

Millbury's zoning bylaws offer a good deal of flexibility in dealing with residential development. Table 7 shows the minimum lot size and other dimensional requirements for each zoning district.

In addition, the Town has an Open Space Community planned unit development provision in its zoning bylaws permitting residential clustering on smaller lots, and limited commercial uses serving the residences, providing there are 50 or more dwellings to serve. Minimum lot sizes are reduced to as small as 12,500 sq. ft. with the presence of public water and sewer. Ten acres is the minimum parcel size for such a development, and 30% of the space must be left open.

Industrial land is scattered around Millbury. One reason for this is that there is relatively little level land in Millbury. It is a hilly town with pockets of flat land along stream valleys which have been developed for industry. Two places for industrial expansion are along the Providence Highway and Route 146 at the Sutton Town Line, where there is flat land, good highway access and compatible industrial/commercial land uses in Sutton. Another area for industrial expansion is along Route 122, where Wyman-Gordon has industrial facilities.

A number of power transmission lines occupy industrially zoned land in Millbury, reducing the inventory of this scarce economic resource. According to the report Millbury. . .Toward the Year 2000, performed by the Valley Consulting Group in the late 1980's, there is only 14 acres of vacant and developable land zone for industrial usage in the town (See Map 11 for Millbury's zoning districts).

Table 7
Existing Dimensional Requirements in Millbury's Zoning Bylaws

District	Minimum Lot Area	Minimum Lot Frontage	Minimum Yards Front	Side	Rear	Max. Lot Coverage	Max. Bldg. Height
Suburban I*	60,000 sq. ft.	150 ft.	25 ft.	10 ft,	10 ft.	30%	30 ft.
Suburban II*	40,000 sq. ft.	150 ft.	25 ft.	10 ft.	10 ft.	30%	30 ft.
Suburban III*	40,000 sq. ft.	150 ft.	25 ft.	10 ft.	10 ft.	30%	30 ft.
Suburban IV*	40,000 sq. ft.	150 ft.	25 ft.	10 ft.	10 ft.	30%	30 ft.
Residential I, II and III*	40,000 sq. ft.	100 ft.	25 ft.	10 ft,	10 ft	30%	30 ft.
Business I	no req.	no req.	no requirement			80%	40 ft.
Business II	16,000 sq. ft.	250 ft.	75 ft.	10 ft.	10 ft.	40%	40 ft.
Residence in Business Zones	12,500 sq. ft.	100 ft.	25 ft.	10 ft.	10 ft.	30%	30 ft.
Industry I	80,000 sq. ft.	150 ft.	30 ft.	20 ft.	20 ft.	40%	50 ft.
Industry II	80,000 sq. ft.	200 ft.	30 ft.	20 ft.	20 ft.	35%	55 ft.

* In each suburban and residential zone, the minimum lot areas are reduced if sewer is available, and reduced further if both sewer and water are available. In

especially in East Millbury, have much less acreage for neighborhood parks and playgrounds than recommended. On the other hand, West Millbury has more neighborhood parks and playgrounds than the minimum recommendations.

Recreation and Open Space Standards Suggested by the National Recreation and Park Association

Total local or close-to-home space = 6.25 to 10.5 acres per 1000 population

Component	Use	Desirable Size	Acres per 1000 population	Desirable Site Characteristics
Minipark	Specialized facilities that serve a concentrated or limited population or specific group such as tots or senior citizens	1 acre or less	0.25 to 0.5	Within neighborhoods and close to apartment complexes, townhouse development, or housing for the elderly
Neighborhood park/ playground	Area for intense recreational activities such as field games, crafts, skating, and picnicking; also for wading pool and playground apparatus areas	5 to 15 acres	1.0 to 2.0	Suited for intense development; easily accessible to neighborhood population; geographically centered with safe walking and bike access; may be developed as a school-park facility
Community park	Area of diverse environmental quality; may include areas suited for intense recreational facilities, such as athletic complexes, large swimming pools; may be an area of natural quality for outdoor recreation such as walking, viewing, sitting, picnicking; may be any combination of the above, depending upon site suitability and community need	25+ acres	5.0 to 8.0	May include natural features such as water bodies, and areas suited for intense development; easily accessible to neighborhood served.

Goals for Open Space and Recreation

Standards for type of recreation and area can only tell part of the story about a town's demand for open space and recreation. For example, T-ball, Little League, and soccer are growing, both in interest and in participation and the standards do not include considerations of changes in use of recreation facilities.

The public participation process developed goals for the master plan, some of the most important goals for open space and recreation are to develop strategies to:

- *preserve Millbury's essential character, which includes its rural landscapes, scenic river views and historic mill town tradition,*
- *preserve, protect and expand the protected open space in town, and*
- *enhance, improve and maintain the town's recreational facilities.*

These goals relate to the quality of open space and recreation areas and their contribution to the lives of the town's residents. The following recommendations represent measures for helping to achieve the open space and recreation goals expressed by the participants in the plan development process.

Preserve Millbury's rural character

- Acquire through gift, easement, or purchase specific, critically located, and highly visible parcels in Millbury. A priority cluster of parcels for protection is the 180± acre area including Mount Ararat and the abandoned portion of the Old Common Road. Mount Ararat is visible from many areas in town and offers the hiker spectacular views. While the stonewall lined Old Common Road has important scenic and historic values.
- Encourage continued participation and enrollment in farmland and forestry tax reduction programs under MGL Ch. 61 for agricultural land, 61A for forestry, and 61B for private recreational land, and in the state Agricultural Preservation Restriction (APR) program managed by the state Department of Food and Agriculture. Only the APR program provides permanent protection of these lands.
- Protect inland wetlands and wildlife habitats through enforcement of regulations on wetlands and flood plains.
- Develop incentives to encourage cluster developments to dedicate open space that contributes to a network of open space and helps preserve the town's rural character.

Preserve, protect and expand the protected open space in town

- Utilize the extensive network of transmission line right-of-ways and other undeveloped land as wildlife corridor linkages between existing and future protected open space.
- Work with transmission right-of-way owners to provide public access for a network of pathways that link the town's open spaces and recreation areas. This network of pathways should connect to the planned Blackstone River bike path and the proposed multi-purpose pathway on the abandoned railroad right-of-way between downtown and the Worcester commuter rail line.
- Encourage owners of wetlands, especially adjacent to already protected areas, to protect these valuable habitats through donation to the Conservation Commission, private land trusts, or through conservation restrictions that will reduce taxes and provide permanent protection.
- Encourage appropriate riverside development and recreational uses along the Blackstone River and its tributary streams.

14. PLAN IMPLEMENTATION

Summary of Implementation Measures by Planning Districts
A set of twelve planning districts has been defined for purposes of elaborating the policies to be followed in implementing the Master Plan for Millbury. These are shown on the map on Map 19. Each of the districts has a somewhat different character, and should be considered separately for plan implementation. Recommended measures by district are:

1) West Millbury
This area should remain largely unsewered, with the existing 60,000 sq. ft. minimum lot size. Where town sewer lines are extended into this area, lot sizes should not be reduced. Smaller lots should be permitted only under cluster zoning with common septic, or town sewer, or small package wastewater treatment plants. Cluster zoning should be applied to maintain the same number of dwelling units that could be achieved under conventional subdivision of land (with 60,000 sq. ft. lots). Agricultural activities should be encouraged and development rights to key open space parcels should be obtained by the town or non-profit groups. Key parcels should be connected as greenways and wildlife corridors. Several significant views should be maintained and scenic roads should be established throughout. Where residential development occurs it should be clustered to save open land. Home sites should be in wooded areas with existing open land preserved as the common land in clusters.

2) Bramanville/Elmwood Street
With both sewer and water service extended to this area, residential lot size may be reduced to 40,000 sq. ft. However, lot sizes should not be smaller (except in the Bramanville Village area) because of the desire to preserve the open character of the area as a transition into West Millbury. The villages in this and the West Millbury area should be protected with a village overlay zone that requires future development to be consistent in terms of scale and density with existing development. The villages are Bramanville, West Millbury, Grass Hill and Old Common. Their recommended designation as historic districts should also help protect them and retain their character.

3) Greenwood/McCracken Road
This suburbanizing area near commercial areas on Route 20 in Millbury and in Auburn is situated on land with only slight or slight-to-moderate physical development constraints. Suburban development should be maintained at one-half acre to one-acre densities. Here as well, cluster development should be encouraged to preserve as much open land as possible. In coordination with this policy, if sewers are extended south of McCracken Road minimum lot sizes should not be reduced. Some additional neighborhood recreation facilities, such a soccer field, will be needed because this area is somewhat remote from other facilities in Millbury.

4) Route 146 Corridor

The Route 146 Corridor is where Millbury primarily intends to achieve its economic development objectives: creating new jobs and broadening the tax base. However, this must be done in the context of preserving and utilizing the nearby environmental resources (principally the Blackstone River) and avoiding the strip commercial appearance common on so many of the arterial highways radiating from Worcester (e.g., Route 122). It is recommended that a 10-acre minimum parcel size be adopted for highway commercial development in the zoning overlay district used in the corridor. It is also recommended that, through site plan review and working with developers, a mix of retail, services and lodging facilities be contained in various "village-type" developments. An industrial area, surrounding an existing commercial area, is recommended for the southern edge of the corridor, forming a gateway into Millbury. This transition area should be well designed and represent the town as a series of villages.

The amount of land along Route 146 is limited by the rail line and river that parallel the roadway. Moreover, the river presents floodplain restrictions and the town's well field is in the corridor. Therefore, sites along or nearby the river are very limited. To increase the number of sites in the general area, it is possible to extend the commercial zoning to the west, build a road accessing this hill-side area, and create one or more terraced business parks. It would be relatively expensive to do this, but the overall desirability of the area, and its regional access, may justify the expenses. There are water and sewer connections available from McCracken Road and Elmwood Street.

5) East Millbury/North of the Massachusetts Turnpike

Connected to the rest of Millbury by only three roads, this is an area of small residential lots and interspersed commercial and industrial development whose character is like that of development in southern Worcester. Because of the existing mixed nature of the land uses, a policy of "infill" on vacant lots is recommended. It is also recommended that recreational facilities and roadways be upgraded in the area. Some further industrial development is appropriate, as extensions of existing industrial areas -- provided there is adequate screening from nearby residential areas. Because the northeastern part of the area is served by Route 122 and an interchange with the Massachusetts Turnpike, regional accessibility is good. (This regional accessibility will be further enhanced if a commuter rail station is built in the area.) Accessibility factors, combined with the suitability of the land for development, has lead us to recommend further commercial and industrial activities, provided that adequate safeguards are put in place for minimizing the impacts on surrounding residential uses.

Currently East Millbury is not sewered. Because smaller lots predominate in the area it is important that sewers be extended to the East Millbury in the future. Sewers are also required for industrial development in the two industrial districts in East Millbury.

extensive electric power transmission lines. Lot splitting should not be permitted in the Suburban-I zone because it is contrary to the general intent to keep overall residential densities down in West Millbury, and maintain the open character of that area.

Multi-family residences should be subject to special permits in any zone, because of their special needs for landscaping, circulation and parking, and buffering from adjacent single-family residential development. Currently proposed multi-family development is subject to granting of a special permit only in the suburban zones and the Residential-III zone.

Section 44 of the zoning bylaws, which deals with open space community developments, should require a plan for management of open areas, to be held in common, as part of an application for such a development. Several options for ownership of such lands are mentioned, but there is no current requirement for a plan proposing how commonly- or town-owned lands in the development would be managed. Such a plan can provide an important safeguard against the lands becoming overgrown or used as trash dumps or otherwise being misused or neglected.

In the Highway Overlay District along Route 146, the minimum development parcel sizes should be increased as follows.

	Minimum Parcel Size	
	Existing	Proposed
Node Classification I	16 acres	20 acres
Node Classification II	4 acres	10 acres

From a market standpoint, this should result in improved development opportunities, and should better meet the objective of creating clusters of mixed use developments, rather than typical roadside commercial sprawl and clutter. In particular, larger minimum parcel sizes should create more opportunities to incorporate connections to the Blackstone River and the proposed bike path. The underlying zoning in the corridor should be redesignated from Industrial-1 to Business-2 in order to better target the types of use most beneficial to the town for tax revenue purposes. This will prevent the area from being used for warehousing and transportation terminal uses, which have lower per sq. ft. values than more desirable retail, office, and lodging uses. Because they are generally smaller in scale, these latter uses also present more of an opportunity to create village-like clusters of mixed activities.

The entire Business-2 zone and Highway Overlay Zone along Route 146 should be extended west to abut, or even include, some town-owned land on which Elmwood and Shaw Middle Schools are located. Eventually a road to access this mostly hill-side land should be built to service a potential business/institutional park that could be built overlooking Route 146 and the Blackstone River. This is the best solution to creating larger scale commercial development along Route

146, rather than creating numerous driveways directly on this limited access highway. A new business park roadway could connect to Tainter Hill Road in the north and connect back in to Route 146 just north of Elmwood Street. Properly designed buffering would protect the adjacent school and residential uses from any adverse impacts of the business park.

Village Overlay Zoning

Millbury's villages should be protected through the use of overlay zoning districts that regulate building bulk and placement. Overlay districts will be one of three measures used to protect the villages. The other two are the designation of historic and neighborhood preservation districts, and creation of open space easements around villages to contain and delineate them. A land trust dedicated to this purpose should be formed and activated. Working with key landowners the land trust would encourage creation of open space easements, cluster development with open land that delineated existing villages, and use of other open space measures such as property tax abatements.

Village overlay zoning should permit smaller lots, perhaps as small as 6,000 to 8,000 square feet, smaller building setbacks, and narrower frontage requirements than in surrounding zoning districts. The dimensional requirements for village overlay districts need not be the same, because each village has its own character and dimensions. Specific standards for each village should be worked out and proposed in zoning bylaw amendments.

Subdivision Regulations

Two changes are recommended for Millbury's subdivision regulations. Currently the regulations allow an *option* for the Planning Board to require an increase in the minimum radius of cul-de-sacs from 60 feet to 80 feet. This permits a 40 foot diameter circle to be retained in the center for creation of a visual focus. It can be landscaped and/or developed with a structure, such as a gazebo or sculpture. More lots with more rational shapes can be developed around larger cul-de-sacs, and traffic will flow better around them. Creation of distinctive features in the center of cul-de-sacs also allow for some "signature" design elements to distinguish one subdivision from other. It is recommended that these larger cul-de-sacs be *required,* except in cases where there is a strong possibility that the road will eventually be extended. In this case the right-of-way for a future roadway extension should be part of a subdivision.

A second recommended change is that granite curbing be required in designated village areas. This will aid in maintaining village character.

Regional Designations

There are several active regional planning and development processes in the area. Millbury actively participates in two of them and should join the third (dealing with economic development). This would ensure that Millbury interests are reflected in the programs of all the regional agencies. These include the Blackstone River Valley Historic Commission (BRVHC), the Central Massachusetts Regional Planning Commission (CMRPA), and the Central Massachusetts Economic Development Authority CMEDA).

Most fundamentally, Millbury should ensure that its projects, such as a new bikepath and business park road and sewer extensions, are approved and included on the appropriate regional project authorizations. These include the Transportation Improvement Program (TIP) of the CMRPA, the Overall Economic Development Program (OEDP) of the CMRPA, and the program of investments of the BRVHC. Additionally, Millbury should consider joining the Central Massachusetts Economic Development Authority after studying whether the Town would receive a more favorable long-term benefit/cost situation by having the Authority pay for infrastructure improvements for its commercial area projects, such as an industrial park on the Sutton border on Route 146, and a possible business park overlooking Route 146 between Elmwood Street and Tainter Hill Road.

Capital Budgeting

Table 17 shows capital budget program recommendations for 1998 to 2002, as prepared by Millbury's Capital Budget Committee. There will be additional departmental requests for funds over the next several years. All existing requests in the budget average about $550,000 per year. It will be important to include those capital items envisioned in the Master Plan in future versions of the capital budget. These include:

- Acquire and dedicate local matching funds for the proposed library addition.
- Schedule school building improvements over a five year period.
- Widen the roadway on South Main Street at the VFW site.
- Create a bike path (multi-purpose trail) from Millbury Center, connecting with the Blackstone River Bike Path, to East Millbury, along the existing rail line, connecting with a future commuter rail station, if built, and connecting with future bike paths in Worcester on the west side of Lake Quinsigamond.
- Set aside funds for key open space and recreation land acquisitions.
- Acquire additional land in Millbury Center for off-street parking.
- Build a year-round all-age recreation facility in Millbury Center, perhaps at Windle Field, but possibly at another nearby site.
- Continue with sewer extensions.

ATTACHMENT F
Excerpts from Town of Millbury Zoning By-Law

15.31 Protection of adjoining premises against any possible detrimental or offensive uses on the site, including unsightly or obnoxious appearance. (By-Laws of 4-1-78, Art. 40)

15.32 Convenience and safety of vehicular and pedestrian movement within the site, and in relation to adjacent streets and property. (By-Laws of 4-1-78, Art. 40)

15.33 Adequacy of the methods of disposal for sewage, refuse and other wastes resulting from the uses permitted or permissible on the site, and the methods of drainage for surface water. (By-Laws of 4-1-78, Art. 40)

15.34 Adequacy of space for the off-street loading and unloading of vehicles, goods, products, materials, and equipment incidental to the normal operation of the establishment or use. (By-Laws of 4-1-78, Art. 40)

Section 16. Applicability.

16.1 Other Laws.

Where the application of this by-law imposes greater restrictions than those imposed by any other regulations, permits, easements, covenants or agreements, the provisions of this by-law shall control. (By-Laws of 4-1-78, Art. 40)

16.2 Conformance.

Construction or operation under a building or special permit shall conform to any subsequent amendment of this by-law unless the use or construction is commenced within a period of six (6) months after the issuance of the permit and in cases involving construction, unless such construction is continued through to completion as continuously and expeditiously as is reasonable. (By-Laws of 4-1-78, Art. 40)

16.3 Nonconformancy.

The lawful use of any structure or land existing at the time of enactment or subsequent amendment of this by-law may be continued although such structure or use does not conform with provisions of the by-law, subject to the following conditions and exceptions: (By-Laws of 4-1-78, Art. 40)

16.31 Abandonment. A nonconforming use which has been abandoned or discontinued for a period of two (2) years or more shall not be re-established and any future use shall conform with the by-law. (By-Laws of 4-1-78, Art. 40)

16.32 Change, extension or alteration. As provided in Section 6, Chapter 40A, General Laws, a nonconforming single or two family dwelling may be altered or extended, provided that the inspector of buildings determines that doing so does not increase the nonconforming nature of said structure. Other pre-existing nonconforming structures or uses may be extended, altered or changed in use on special permit from the board of appeals if the board of appeals finds that such extension, alteration or change will not be substantially more detrimental to the neighborhood than the existing nonconforming use. Once changed to a

conforming use, no structure or land shall be permitted to revert to a nonconforming use. (By-Laws of 4-1-78, Art. 40)

16.33 Restoration. Necessary repairs and rebuilding of nonconforming structure after damage by fire, storm or similar disaster, or condemnation are permitted provided that they are started within twelve (12) months and completed within twenty-four (24) months of the catastrophe, do not substantially change the character or size of the building or the use to which they were put prior to such damage, and do not increase the gross floor area previously existing. (By-Laws of 4-1-78, Art. 40; By-Laws of 5-7-91, Art. 1)

16.34 Isolated lots and subdivisions. Under Section 6 of Chapter 40A, General Laws, lots not held in common ownership with any adjoining land are generally not subject to subsequent amendments in dimensional requirements, and land shown on subdivisions or other plans endorsed by the planning board are exempted from subsequent zoning amendments in certain respects for five (5) years. In addition, lots in nonresidential districts and/or to be built upon for nonresidential use shall enjoy the same exemption as if being built upon for residential use in a residential district. Any increase in lot area, frontage, yard or coverage requirements of this by-law shall not apply to erection, extension, alteration or moving of a structure on a legally created lot not meeting current requirements provided that the applicant documents that:

(a) At the time such increase requirement became applicable to it, the lot:

(1) Had at least five thousand (5,000) square feet of lot area and fifty (50) feet of frontage on a street; and

(2) Was held in ownership separate from all other lots having frontage within one thousand (1,000) feet on that same street; and

(3) Conformed to then existing dimensional requirements; and

(b) The lot is to be used for single-family or nonresidential use. Such conforming lots may be changed in size or shape or their land area combined without losing this exemption, so long as the change does not increase the actual or potential number of buildable lots. (By-Laws of 4-1-78, Art. 40)

Section 17. Amendments.

This by-law may from time to time be changed by amendment, addition or repeal by the town meeting in the manner provided in Section 1, Chapter 40A, General Laws, and any amendments therein. (By-Laws of 44-78, Art. 40)

Section 18. Court Appeals.

Any person aggrieved by a decision of the board of appeals or of any special permit granting authority, whether or not previously a party to the proceeding, or any municipal officer or board may, as provided in section 17, Chapter 40A, General Laws, appeal to the Superior Court by bringing an action within twenty (20) days after the decision has been filed in the

previous

24.3 In a business district no lot shall be built upon or changed in size or shape except in conformity with the following:

For two-family dwellings or a single or two-family dwelling on the same lot as a non-residential use, increase lot area by 50 percent (50%). For dwelling units in excess of two (2) in the Business I district, see section 32.8, Special Density Provisions.

* * Increase by twenty-five percent (25%) where abutting a residence or suburban district. Thirty percent (30%) of a required yard area shall be free of any paving and maintained with vegetation. (By-laws 5-2-75, Art. 86 (1); By-laws of 4-2-77, Art. 65, s. 1; By-laws of 4-4-81, Art. 24; By-laws of 4-5-86) Art. 51, s. 18; By-laws of 5-1-90, Art, 70-, By-laws of 5-3-94, Art. 47)

Section 25. Industrial Districts.

The intent of industrial districts is to provide exclusively for environmentally compatible industry in areas suited to that use by access, absence of conflicting use, and services.

25.1 In an industrial district, only the following uses are permitted:

25.11 Permitted Community Service Uses:

In Industrial I and Industrial II:

School or college;

Religious, sectarian or denominational buildings or uses.

In Industrial I only:

Nursing, convalescent or rest home, or hospital;

Public utility;

Cemetery;

Municipal use not elsewhere more specifically cited; Nonprofit club or lodge; Philanthropic institutions; Airfield or heliport; Veterinary, animal hospital or kennel.

25.12 Permitted Business Uses:

Industrial II only:

*Business or professional offices;

*Printing and publishing.

Industrial I only:

Building materials or construction equipment sales or storage;

Personal services;

Restaurant without counter service or drive thru;

Funeral home or mortuary;

Building tradesmen and contractors. (By-Laws of 4-2-77, Art. 68, Section 3; By-Laws of 5-7-9 1, Art. 50)

25.13 Permitted Industrial Uses:

In Industrial I and Industrial II:

*Manufacturing, processing or research, other than asphalt plants;

*Warehousing, wholesale distribution not involving bulk storage. In Industrial I only:

Stone and monument works. (Bylaws of 4-1-78, Art. 40; By-Laws of 5-7-91, Art. 50)

25.14 Other Permitted Uses:

In Industrial I and Industrial II:

Agricultural, horticultural or floricultural uses;

Parking to service a permitted use.

In Industrial I only:

Radio station;

Standard or par-3 golf course. (By-Laws of 4-1-78, Art. 40)

25-15 Permitted Accessory uses in Industrial I and Industrial II: Home occupation, in accordance with Section 41;

Roadside stand for goods principally produced on the premises;

Residential uses incidental and necessary to an industrial establishment;

Temporary structures to be used only as temporary construction offices in relation to and in conjunction with a current construction project and to be removed in the case of building construction upon the final issuance of all occupancy permits, or in the case of other types of construction projects upon the completion of all construction work, in either case the temporary structure shall not remain on the property for more than twenty-four (24) months.

Other customary accessory uses. (By-Laws of 4-2-83, Art. 18)

25.2 In an industrial district, the following uses are permitted if granted a special permit by the special permit granting authority:

(By-Laws of 4-1-78, Art. 40)

25.21 In Industrial I and Industrial II:

Earth removal in accordance with Section 42;

Freight or transportation terminal, if not within eight hundred feet (800') of more than two (2) dwellings;

Temporary structure or uses not conforming to this by-law;

Accessory scientific use in accordance with Section 46; (By-Laws of 4-2-77, Art. 68, Section 4; By-Laws of 4-1-78, Art. 40; By-Laws of 5-7-91, Art. 50)

25.22 In Industrial 11 only, and subject to Environmental analysis procedures of Section 1;

Public utility; Motel or hotel; Heliport; Restaurant; Uses marked * in Sections 25.12 and 25.13;

Retail sales and service of new motor vehicles and light trucks, and retail sales and service of used motor vehicles and light trucks in conjunction with new motor vehicle and light truck sales. (By-Laws of 4-2-77, Art. 68, Section 5; By-Laws of 4-1-78, Art. 40; By-laws of 9-19-95, Art. 8)

25.23 In Industrial I: [Added ATM 5/4/99]

Veterinary or animal hospital or kennel.

25.3 In an Industrial District, no lot shall be built upon or changed in size or shape except in conformity with the following:

*Thirty percent of required yard area shall be free of any paving and maintained with vegetation. Entire yard to be free of outdoor storage of materials.

**If abutting a residential or suburban district boundary, increase to one hundred feet (100'), of which forty feet (40') shall be free of any paving or outdoor storage of materials, and maintained with vegetation. (By-Laws of 9-30-74, Art. 8(III); By-laws of 4-1-78, Art. 41; By-Laws of 5-7-91, Art. 86; By-Laws of 5-5-92, Art. 32)

Section 26. Wireless Communications Facilities

26.1 Purpose and Intent, Definitions

26.1.1 Purpose and Intent

The Town recognizes the quasi-public nature of wireless communications systems and finds that these regulations are necessary to protect public safety, to protect the ecological, scenic, historical and recreational values of the Town and to ensure that adverse visual and operational effects will not contribute to blighting, deterioration or other deleterious effects upon the surrounding neighborhood. It is the intent of this Section to provide for establishment and/or expansion of cellular telephone, mobile radio and personal communication and similar systems within the Town of Millbury while protecting neighborhoods and minimizing the adverse visual and operational effects of wireless telecommunications facilities through careful design, siting and screening and in furtherance of the requirements of the Telecommunications Act of 1996. More specifically the Section has been developed in order to:

Maximize use of existing and approved towers and other structures to accommodate new antennas and transmitters in order to reduce the number of wireless communications facilities needed to serve the community.

Encourage providers to colocate their facilities on a single structure or site 0 Minimize the

35.5 Hazard

No use shall be allowed which would create hazard due to explosion, fire, or other causes. Potentially hazardous conditions shall be fenced, covered, or removed to prevent injury.

35.6 Vegetation Removal.

No area of an acre or larger shall have existing vegetation clear-stripped or be filled six (6) inches or more such as to destroy existing vegetation unless in conjunction with agricultural activity, or unless under a currently valid building permit, or unless within streets designated on an approved subdivision plan; or unless a special permit is approved by the special permit granting authority, on condition that runoff will be controlled, erosion avoided, and either a constructed surface or natural vegetation will be provided within a reasonable period, for the assurance of which a bond may be required. (By-laws of 3-17-73; By-laws of 4-5-80, Art. 75)

35.7 Fences.

No fence, wall, or hedge shall exceed six (6) feet in height, and no fence shall exceed thirty (30) inches in height within any required front yard area or within twenty (20) feet of the street, whichever is the lesser requirement, except that the special permit granting authority may grant a Special Permit for higher fences in cases where such will not endanger health or safety, or unreasonably impair vision or circulation of air. (By-laws of 5-27-75, Art. 82; By-laws of 4-5-80, Art. 75)

Section 36. Floodplain District Requirements

36.1 Purposes.

The purposes of this district (in addition to those enumerated elsewhere in this zoning by-law) are:

(a) To provide that lands in the Town of Millbury subject to seasonal or periodic flooding as described hereinafter shall not be used for residence or other purposes in such a manner as to endanger the health, safety, or welfare of the occupants thereof, or of the public generally, or so as to burden the public with costs resulting from unwise individual choices of land use.

(b) To assure the continuation of the. natural flow pattern of the watercourses within the Town, in order to provide adequate and safe floodwater storage capacity to protect against the hazards of flood inundation. (By-laws of 4-7-79, Art. 55)

36.2 District Delineation.

The floodplain district is herein established as an overlay district and includes all special flood hazard areas designated as Zone A and Zones A-1 to A-30 on the Millbury Flood Insurance Rate Maps (FIRM), and the Flood Boundary and Floodway Maps dated January 7,

2000, on file with the Town Clerk, the Planning Board, and the Building Inspector. These maps, as well as the accompanying Millbury Flood Insurance Study are incorporated herein by reference. Within Zone A, where the base flood elevation is not provided on the FEW, the Building Inspector shall obtain and review existing base flood elevation data. If the data is sufficiently detailed and accurate, it shall be relied upon to require compliance with this zoning by-law. (By-laws of 4-7-79, Art. 55) (Amended ATM 5/2/00, Approved by AG 6/16/00

36.3 Usages Within a Floodplain District.

The floodplain district is an overlay district. Any uses permitted in the portions of the districts so overlaid shall be permitted, subject to all the provisions of the following sections,

In the floodplain district no new buildings shall be erected or constructed except by Special Permit from the Special Permit granting authority, nor shall existing buildings be enlarged or moved except as hereinafter provided. No dumping, filling, or earth transfer or relocation shall be permitted, and no land or building shall be used for any purpose except:

(1) Conservation of water, plants, and wildlife:

(2) Outdoor recreation, including play areas, nature study, boating, fishing, and hunting where otherwise legally permitted, but excluding buildings and structures;

(3) Wildlife management areas, foot, bicycle, and/or horse paths and bridges, provided such uses do not affect the natural flow pattern of any water course;

(4) Grazing and farming, including truck gardening and harvesting of crops;(

(5) Forestry and nurseries;

(6) Temporary non-residential structures used in connection with fishing or growing, harvesting, storage or sale of crops raised on the premises;

(7) Maintenance, repair, reconstruction, and additions of up to fifty percent (50%) of market value of buildings lawfully existing prior to the adoption of these provisions;

(8) Installation of driveways of minimum size necessary to serve areas outside the floodplain district, where other access is not feasible, provided no change in grade exceeds one foot vertically.

In addition, the following uses are specifically prohibited and may not be allowed by Special Permit:

(1) The storage or disposal of any soil, loam, peat, sand, gravel, rock, or other

mineral substance, refuse, trash, rubbish, debris, or dredged spoil;

(2) Draining, excavation, or dredging, or removal or relocation of loam, peat, sand, gravel, soil, rock, or other mineral substance, except as accessory to work permitted as of right or by special permit;

(3) The storage or disposal of materials Used for snow and ice control including sand, salt and other deicing chemicals;

(4) The storage or disposal of hazardous wastes, as defined by the hazardous waste regulations promulgated by the hazardous waste board, the water resources commission, and the division of water pollution control, under the provisions of Sections 27(8), 52, 57, and 58 of Chapter 21 of the General Laws. The portion of any lot within the area delineated in 36.2 above may be used to meet the area and yard requirements for the district or districts in which the remainder of the lot is situated. (By-laws of 4-7-79, Art. 55; By-laws of 4-5-80, Art. 75)

36.4 Special Permits.

The special permit granting authority may consider and issue special permit for uses, other than those occurring in the floodway, deviating from the regulations set forth in these by-laws only upon:

(1) A showing of good and sufficient cause, and;

(2) A determination that the construction of a structure will be in conformance with the state building code (specifically those sections dealing with construction floodplains) and will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud or victimization of the public, or conflict with existing local laws. The special permit granting authority may require such additional requirements and conditions as it finds necessary to protect the health, safety, and welfare of the public or the occupants of the proposed use, or of the floodplain district. The special permit granting authority shall provide notice of any hearings hereunder to the planning board, the board of health, and the conservation commission, and shall maintain a record of all special permit actions, including justification for their issuance and report such special permits in the annual report submitted to the federal insurance administration, (By-laws of 4-7-79, Art. 55; By-laws of 4-5-80, Art. 75)

36.5 Disclaimer of Liability.

This zoning by-law does not imply that land outside the areas of the floodplain district or uses permitted within such district will be free from flooding or flood damage. This by-law shall not create liability on the part of the Town of Millbury or by any official thereof for any flood damage that may result from reliance upon this by-law or any administrative decision lawfully made thereunder. (By-laws of 4-7-79, Art. 55)

ATTACHMENT G
Relevant Provisions of the Rivers Protection Act (310 CMR 10.000)

10.56: continued

(4) General Performance Standards.

(a) Where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within Land Under Water Bodies and Waterways shall not impair the following:

1. The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;
2. Ground and surface water quality;
3. The capacity of said land to provide breeding habitat, escape cover and food for fisheries; and
4. The capacity of said land to provide important wildlife habitat functions. A project or projects on a single lot, for which Notice(s) of intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures established under 310 CMR 10.60.

(b) Notwithstanding the provisions of 310 CMR 10.56(4)(a), the issuing authority may issue an Order in accordance with M.G.L. c. 131, § 40 to maintain or improve boat channels within Land Under Water Bodies and Waterways when said work is designed and carried out using the best practical measures so as to minimize adverse effects such as the suspension or transport of pollutants, increases in turbidity, the smothering of bottom organisms, the accumulation of pollutants by organisms or the destruction of fisheries habitat or nutrient source areas.

(c) Notwithstanding the provisions of 310 CMR 10.56(4)(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.

10.57: Land Subject to Flooding (Bordering and Isolated Areas)

(1) Preamble.

(a) Bordering Land Subject to Flooding:

1. Bordering Land Subject to Flooding is an area which floods from a rise in a bordering waterway or water body. Such areas are likely to be significant to flood control and storm damage prevention.
2. Bordering Land Subject to Flooding provides a temporary storage area for flood water which has overtopped the bank of the main channel of a creek, river or stream or the basin of a pond or lake. During periods of peak run-off, flood waters are both retained (*i.e.*, slowly released through evaporation and percolation) and detained (slowly released through surface discharge) by Bordering Land Subject to Flooding. Over time, incremental filling of these areas causes increases in the extent and level of flooding by eliminating flood storage volume or by restricting flows, thereby causing increases in damage to public and private properties.
3. Certain portions of Bordering Land Subject to Flooding are also likely to be significant to the protection of wildlife habitat. These include: (a) all areas on the ten year floodplain or within 100 feet of the bank or bordering vegetated wetland (whichever is further from the water body or waterway, so long as such area is contained within the 100 year floodplain), and (b) all vernal pool habitat on the 100 year floodplain, except for those portions of (a) and (b) which have been so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated (such "altered" areas include paved and gravelled areas, golf courses, cemetaries, playgrounds, landfills, fairgrounds, quarries, gravel pits, buildings, lawns, gardens, roadways (including median strips, areas enclosed within highway interchanges, shoulders, and embankments), railroad tracks (including ballast and embankments), and similar areas lawfully existing on November 1, 1987 and maintained as such since that time).

10.57: continued

The hydrologic regime, plant community composition and structure, topography, soil composition and proximity to water bodies and bordering vegetated wetlands of these portions of bordering land subject to flooding provide important food, shelter, migratory and overwintering areas, and breeding areas for wildlife. Nutrients from flood waters, as well as the inundation of floodplain soil, create important wildlife habitat characteristics, such as richness and diversity of soil and vegetation. A great many species require or prefer habitat which is as close as possible to water and/or has moist conditions, characteristics generally present on lower floodplains. Similarly, lower floodplains, because of their proximity to water and vegetated wetlands, can provide important shelter for wildlife which needs to migrate between such areas, or between such areas and uplands. The "edge" where floodplain habitat borders vegetated wetlands or water bodies is frequently very high in wildlife richness and diversity. Similar "edges" may be found elsewhere the lower floodplain, where differences in topography and frequency of flooding have created varied soil and plant community composition and structure.

Finally, vernal pool habitat is found at various locations throughout the 100 year floodplain, the pool itself generally formed by meander scars, or sloughs left after the main water channel has changed course. These pools are essential breeding sites for certain amphibians which require isolated areas that are generally flooded for at least two continuous months in the spring and/or summer and are free from fish predators. Most of these amphibians remain near the breeding pool during the remainder of their lifecyle. Many reptiles, birds and mammals also feed here.

(b) Isolated Land Subject to Flooding:

1. Isolated Land Subject to Flooding is an isolated depression or a closed basin which serves as a ponding area for run-off or high ground water which has risen above the ground surface. Such areas are likely to be locally significant to flood control and storm damage prevention. In addition, where such areas are underlain by pervious material they are likely to be significant to public or private water supply and to ground water supply. Where such areas are underlain by pervious material covered by a mat of organic peat and muck, they are also likely to be significant to the prevention of pollution. Finally, where such areas are vernal pool habitat, they are significant to the protection of wildlife habitat.

2. Isolated Land Subject to Flooding provides a temporary storage area where run-off and high ground water pond and slowly evaporate or percolate into the substrate. Filling causes lateral displacement of the ponded water onto contiguous properties, which may in turn result in damage to said properties.

3. Isolated Land Subject to Flooding, where it is underlain by pervious material, provides a point of exchange between ground and surface waters. Contaminants introduced into said area, such as septic system discharges and road salts, find easy access into the ground water and neighboring wells. Where these conditions occur and a mat of organic peat or muck covers the substrate of the area, said mat serves to detain and remove contaminants which might otherwise enter the ground water and neighboring wells.

4. Isolated Land Subject to Flooding, where it is vernal pool habitat, is an essential breeding site for certain amphibians which require isolated areas that are generally flooded for at least two continous months in the spring and/or summer and are free from fish predators. Most of these amphibians remain near the breeding pool during the remainder of their lifecycle. Many reptiles, birds and mammals also feed here.

(2) Definitions, Critical Characteristics and Boundaries.

(a) Bordering Land Subject to Flooding:

1. Bordering Land Subject to Flooding is an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland.

2. The topography and location of Bordering Land Subject to Flooding specified in the foregoing 310 CMR 10.57(2)(a)1. are critical to the protection of the interests specified in 310 CMR 10.57(1)(a). Where Bordering Land Subject to Flooding is significant to the protection of wildlife habitat, the physical characteristics as described in the foregoing 310 CMR 10.57(1)(a)(3) are critical to the protection of that interest.

10.57: continued

3. The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm. Said boundary shall be that determined by reference to the most recently available flood profile data prepared for the community within which the work is proposed under the National Flood Insurance Program (NFIP, currently administered by the Federal Emergency Management Agency, successor to the U.S. Department of Housing and Urban Development). Said boundary, so determined, shall be presumed accurate. This presumption may be overcome only by credible evidence from a registered professional engineer or other professional competent in such matters.

Where NFIP Profile data is unavailable, the boundary of Bordering Land Subject to Flooding shall be the maximum lateral extent of flood water which has been observed or recorded. In the event of a conflict, the issuing authority may require the applicant to determine the boundary of Bordering Land Subject to Flooding by engineering calculations which shall be:

a. based upon a design storm of seven inches of precipitation in 24 hours (*i.e.*, a Type III Rainfall, as defined by the U.S. Soil Conservation Service);

b. based upon the standard methodologies set forth in U.S. Soil Conservation Service Technical Release No. 55, *Urban Hydrology for Small Watersheds* and Section 4 of the U.S. Soil Conservation Service, *National Engineering Hydrology Handbook*; and

c. prepared by a registered professional engineer or other professional competent in such matters.

4. The boundary of the ten year floodplain is the estimated maximum lateral extent of the flood water which will theoretically result from the statistical ten-year frequency storm. Said boundary shall be determined as specified under 310 CMR 10.57(2)(a)3., except that where NFIP Profile data is unavailable, the boundary shall be the maximum lateral extent of flood water which has been observed or recorded during a 10 year frequency storm and, in the event of conflict, engineering calculations under 310 CMR 10.57(2)(a)3.a. shall be based on a design storm of 48/10 (4.8) inches of precipitation in 24 hours.

5. The only portions of this resource area which shall be presumed to be vernal pool habitat are those that have been certified as such by the Massachusetts Division of Fisheries and Wildlife, where said Division has forwarded maps and other information needed to identify the location of such habitat to the Conservation Commission and DEP prior to the filing of each Notice of Intent or Abbreviated Notice of Intent regarding that portion. Such presumption is rebuttable, and may be overcome upon a clear showing to the contrary. However, notwithstanding any other provision of 310 CMR 10.57, should an Environmental Impact Report be required for a proposed project as determined by 301 CMR 11.00 the performance standard established under this Section regarding vernal pool habitat shall only apply to proposed projects which would alter such habitats as have been identified prior to the time that the Secretary of the Executive Office of Environmental Affairs has determined, in accordance with the provisions of 301 CMR 11.09(4), that a final Environmental Impact Report for that project adequately and properly complies with the M.G.L. c. 30, § 6 through 62H (unless, subsequent to that determination, the Secretary requires supplemental information concerning vernal pool habitat, in accordance with the provisions of 301 CMR 11.17).

6. The boundary of vernal pool habitat is that certified by the Massachusetts Division of Fisheries and Wildlife. In the event of a conflict of opinion, or the lack of a clear boundary delineation certified by the Division of Fisheries and Wildlife, the applicant may submit an opinion certified by a registered professional engineer, supported by engineering calculations, as to the probable extent of said habitat. Said calculations shall be prepared in accordance with the general requirements set forth in 310 CMR 10.57(2)(a)3.a. through c., except that the maximum extent of said water shall be based upon the total volume (rather than peak rate) of run-off from the drainage area contributing to the vernal pool and shall be further based upon a design storm of 26/10 (2.6) inches (rather than seven inches) of precipitation in 24 hours. Vernal pool habitat shall include the area within 100 feet of the boundary of the vernal pool itself, insofar as such area is contained within the boundaries of this resource area.

10.57: continued

(b) Isolated Land Subject to Flooding:

1. Isolated Land Subject to Flooding is an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches.

Isolated Land Subject to Flooding may be underlain by pervious material, which in turn may be covered by a mat of organic peat or muck.

2. The characteristics specified in the foregoing 310 CMR 10.57(2)(b)1. are critical to the protection of the interests specified in 310 CMR 10.57(1)(b).

3. The boundary of Isolated Land Subject to Flooding is the perimeter of the largest observed or recorded volume of water confined in said area.

In the event of a conflict of opinion regarding the extent of water confined in an Isolated Land Subject to Flooding, the applicant may submit an opinion certified by a registered professional engineer, supported by engineering calculations, as to the probable extent of said water. Said calculations shall be prepared in accordance with the general requirements set forth in 310 CMR 10.57(2)(a)3.a. through c., except that the maximum extent of said water shall be based upon the total volume (rather than peak rate) of run-off from the drainage area contributing to the Isolated Land Subject to Flooding and shall be further based upon the assumption that there is no infiltration of said run-off into the soil within the Isolated Land Subject to Flooding.

4. The only portions of this resource area which shall be presumed to be vernal pool habitat are those determined under procedures established in 310 CMR 10.57(2)(a)5.

5. The boundary of vernal pool habitat is that determined under procedures established in 310 CMR 10.57(2)(a)6.

(3) Presumption. Where a project involves removing, filling, dredging or altering of Land Subject to Flooding (both Bordering and Isolated Areas) the issuing authority shall presume that such an area is significant to, and only to, the respective interests specified in 310 CMR 10.57(1)(a) and (b). This presumption may be overcome only upon a clear showing that said land does not play a role in the protection of said interests. In the event that the presumption is deemed to have been overcome, the issuing authority shall make a written determination to this effect, setting forth its grounds (Form 6).

(4) General Performance Standards.

(a) Bordering Land Subject to Flooding:

1. Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.

Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways, such compensatory volume shall be provided within the same reach of the river, stream or creek.

2. Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.

3. Work in those portions of bordering land subject to flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.

10.57: continued

(b) Isolated Land Subject to Flooding: A proposed project in Isolated Land Subject to Flooding shall not result in the following:

1. Flood damage due to filling which causes lateral displacement of water that would otherwise be confined within said area.
2. An adverse effect on public and private water supply or ground water supply, where said area is underlain by pervious material.
3. An adverse effect on the capacity of said area to prevent pollution of the ground water, where the area is underlain by pervious material which in turn is covered by a mat of organic peat and muck.
4. An impairment of its capacity to provide wildlife habitat where said area is vernal pool habitat, as determined by procedures contained in 310 CMR 10.60.

(c) Protection of Rare Wildlife Species: Notwithstanding the provisions of 310 CMR 10.57(4)(a) or (b), no project may be permitted which will have any adverse effect on specified wildlife habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.

10.58 Riverfront Area

(1) Preamble. Riverfront areas are likely to be significant to protect the private or public water supply; to protect groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect the fisheries. Land adjacent to rivers and streams can protect the natural integrity of these water bodies. The presence of natural vegetation within riverfront areas is critical to sustaining rivers as ecosystems and providing these public values. The riverfront area can prevent degradation of water quality by filtering sediments, toxic substances (such as heavy metals), and nutrients (such as phosphorus and nitrogen) from stormwater, nonpoint pollution sources, and the river itself. Sediments are trapped by vegetation before reaching the river. Nutrients and toxic substances may be detained in plant root systems or broken down by soil bacteria. Riverfront areas can trap and remove disease-causing bacteria that otherwise would reach rivers and coastal estuaries where they can contaminate shellfish beds and prohibit safe human consumption. Natural vegetation within the riverfront area also maintains water quality for fish and wildlife.

Where rivers serve as water supplies or provide induced recharge to wells, the riverfront area can be important to the maintenance of drinking water quality and quantity. Land along rivers in its natural state with a high infiltration capacity increases the yield of a water supply well. When riverfront areas lack the capacity to filter pollutants, contaminants can reach human populations served by wells near rivers or by direct river intakes. The capacity of riverfront areas to filter pollutants is equally critical to surface water supplies, reducing or eliminating the need for additional treatment. In the watershed, mature vegetation within riverfront areas provides shade to moderate water temperatures and slow algal growth, which can produce odors and taste problems in drinking water.

Within riverfront areas, surface water interaction with groundwater significantly influences the stream ecosystem. The dynamic relationship between surface and groundwater within the "hyporheic zone" sustains communities of aquatic organisms which regulate the flux of nutrients, biomass and the productivity of organisms including fish within the stream itself. The hyporheic zone extends to greater distances horizontally from the channel in large, higher order streams with alluvial floodplains, but the interaction within this zone is important in smaller streams as well.

By providing recharge and retaining natural flood storage, as well as by slowing surface water runoff, riverfront areas can mitigate flooding and damage from storms. The root systems of riverfront vegetation keep soil porous, increasing infiltration capacity. Vegetation also removes excess water through evaporation and transpiration. This removal of water from the soil allows for more infiltration when flooding occurs. Increases in storage of floodwaters can decrease peak discharges and reduce storm damage. Vegetated riverfronts also dissipate the energy of storm flows, reducing damage to public and private property.

Riverfront areas are critical to maintaining thriving fisheries. Maintaining vegetation along rivers promotes fish cover, increases food and oxygen availability, decreases sedimentation, and provides spawning habitat. Maintenance of water temperatures and depths is critical to many important fish species. Where groundwater recharges surface water flows, loss of recharge as a result of impervious surfaces within the riverfront area may aggravate low flow conditions and increase water temperatures. In some cases, summer stream flows are maintained almost exclusively from groundwater recharge. Small streams are most readily impacted by removal of trees and other vegetation along the shore.

10.58: continued

Riverfront areas are important wildlife habitat, providing food, shelter, breeding, migratory, and overwintering areas. Even some predominantly upland species use and may be seasonally dependent on riverfront areas. Riverfront areas promote biological diversity by providing habitats for an unusually wide variety of upland and wetland species, including bald eagles, osprey, and kingfishers. Large dead trees provide nesting sites for bird species that typically use the same nest from year to year. Sandy areas along rivers may serve as nesting sites for turtles and water snakes. Riverfront areas provide food for species such as wood turtles which feed and nest in uplands but use rivers as resting and overwintering areas. Riverfront areas provide corridors for the migration of wildlife for feeding or breeding. Loss of this connective function, from activities that create barriers to wildlife movement within riverfront areas, results in habitat fragmentation and causes declines in wildlife populations. Wildlife must also be able to move across riverfront areas, between uplands and the river.

Vernal pools are frequently found within depressions in riverfront areas. These pools are essential breeding sites for certain amphibians which require isolated, seasonally wet areas without predator fish. Most of these amphibians require areas of undisturbed woodlands as habitat during the non-breeding seasons. Some species require continuous woody vegetation between woodland habitat and the breeding pools. Depending on the species, during non-breeding seasons these amphibians may remain near the pools or travel one-fourth mile or more from the pools. Reptiles, especially turtles, often require areas along rivers to lay their eggs. Since amphibians and reptiles are less mobile than mammals and birds, maintaining integrity of their habitat is critical.

In those portions so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated, riverfront areas are not significant to the protection of important wildlife habitat and vernal pool habitat.

(2) Definitions, Critical Characteristics and Boundaries.

(a) A Riverfront Area is the area of land between a river's mean annual high water line and a parallel line measured horizontally. The riverfront area may include or overlap other resource areas or their buffer zones. The riverfront area does not have a buffer zone. Rivers begin at the point an intermittent stream becomes perennial, or at a spring or pond which discharges throughout the year. Water does not flow throughout the year in intermittent streams; when the water is not flowing, it may remain in isolated pools or surface water may be absent. Downstream of the point of perennial flow, a perennial stream normally remains a river except when interrupted by a lake or pond.

1. A river is any natural flowing body of water that empties to any ocean, lake, pond, or other river and which flows throughout the year. Perennial streams are rivers; intermittent streams are not rivers.

a. The issuing authority shall presume that a river or stream shown as perennial on the current United States Geologic Survey (U.S.G.S.) or more recent map provided by the Department is perennial unless rebutted by evidence from a competent source asserting to the contrary or a finding by the issuing authority. Department staff, conservation commissioners, and conservation commission staff are competent sources; issuing authorities may consider evidence from other sources.

i. If a river or stream is shown as intermittent or not shown on the current U.S.G.S. map or more recent map provided by the Department, an assertion that it is perennial must be supported by evidence by the person making the assertion or by the issuing authority upon its own initiative, which may include evidence of the presence of aquatic macroinvertebrate species which require perennial flows; evidence of a stream order of two or greater; presence of a U.S.G.S. stream gauge at or upstream of the project location; a watershed size of greater than three square miles in any basin except Cape Cod, Taunton, South Coastal, Buzzards Bay, and the Islands; or other evidence.

ii. If a river or stream is shown as perennial on the current U.S.G.S. map or more recent map provided by the Department, an assertion that it is intermittent must be supported by evidence by the person making the assertion or by the issuing authority upon its own initiative, which may include field observations that the river is not flowing, provided the date of observation is not within an extended drought; absence of a channel or banks; soils information showing the groundwater elevation is not at or near the surface; or other evidence.

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b. Rivers include the entire length of the major rivers (Assabet, Blackstone, Charles, Chicopee, Concord, Connecticut, Deerfield, Farmington, French, Hoosic, Housatonic, Ipswich, Merrimack, Millers, Nashua, Neponset, Parker (Essex County), Quinebaug, Shawsheen, Sudbury, Taunton, Ten Mile, and Westfield).

c. Rivers include perennial streams which are dry during periods of extended drought, defined as period when precipitation for the previous four months was below normal for the period of record, with at least three of the four months 75% or less and two of the four months 50% or less of normal precipitation. Rivers and streams which are perennial under natural conditions but affected by drawdown from withdrawals of water supply wells or direct withdrawals shall be considered perennial.

d. Manmade canals (*e.g.*, the Cape Cod Canal and canals diverted from rivers in Lowell and Holyoke) and mosquito ditches associated with coastal rivers do not have riverfront areas.

e. Where rivers flow through lakes or ponds, the riverfront area stops at the inlet and begins again at the outlet. A water body identified as a lake, pond, or reservoir on the current U.S.G.S. map or more recent map provided by the Department, is a lake or pond, unless the issuing authority determines that the water body has primarily riverine characteristics. When a water body is not identified as a lake, pond, or reservior on the current U.S.G.S. map or more recent map provided by the Department, the water body is a river if it has primarily riverine characteristics. Riverine characteristics include unidirectional flow that can be visually observed or measured in the field. In coastal areas, the unidirectional flow may be tidally influenced. In addition, rivers are characterized by horizontal zonation, as opposed to the vertical stratification typically associated with lakes, ponds, and embayments. Great Ponds (*i.e.*, any pond which contained more than ten acres in its natural state, as calculated based on the surface area of lands lying below the natural high water mark; a list is available from the Department) are never rivers.

2. Mean Annual High-Water Line of a river is the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land. The mean high tide line serves as the mean annual high-water line for tidal rivers.

3. The Riverfront Area is the area of land between a river's mean annual high-water line measured horizontally outward from the river and a parallel line located 200 feet away, except that the parallel line is located:

a. 25 feet away in Boston, Brockton, Cambridge, Chelsea, Everett, Fall River, Lawrence, Lowell, Malden, New Bedford, Somerville, Springfield, Winthrop, and Worcester;

b. 25 feet away in densely developed areas, as designated by the Secretary of the Executive Office of Environmental Affairs; and ~ How?

c. 100 feet away for new agricultural and aquacultural activities.

Measured horizontally means that the riverfront area extends at a right angle to the mean annual high-water line rather than along the surface of the land.

Where a river runs through a culvert more than 200 feet in length, the riverfront area stops at a perpendicular line at the upstream end of the culvert and resumes at the downstream end. When a river contains islands, the riverfront area extends landward into the island from and parallel to the mean annual high-water line.

(b) The physical characteristics of a Riverfront Area as described in 310 CMR 10.58(2)(a) are critical to the protection of the interests specified in 310 CMR 10.58(1).

(c) The boundary of the Riverfront Area is a line parallel to the mean annual high-water line, located at the outside edge of the riverfront area. At the point where a stream becomes perennial, the riverfront area begins at a line drawn as a semicircle with a 200 foot (25 foot in densely developed areas; 100 foot for new agriculture) radius around the point and connects to the parallel line perpendicular to the mean annual high-water line which forms the outer boundary. The mean annual high-water line is the upper boundary of the bank, as determined by the first observable break in slope or the mean annual flood level, if it is lower. The mean annual flood level shall be determined through stream flow stage data from U.S.G.S. stream gauges, when available. If the first observable break in slope or the mean annual flood level cannot be clearly determined, other credible evidence of the upper

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boundary of the bank may be offered, including scouring, permanent water marks, or changes in streambed material. Along rivers with wide areas of submergent or emergent vegetation, the mean annual high-water line and the upper boundary of bank will be on landward edge of the vegetated land under water. For tidal rivers, the boundary shall be determined according to the definition of mean high water line at 310 CMR 10.23. When a river flows into coastal waters or an embayment, the river ends where it no longer has primarily riverine characteristics. Where the river's mouth cannot be readily identified, the river ends where a line drawn perpendicular to the shoreline no longer intersects the opposite bank.

(3) Presumption. Where a proposed activity involves work within the riverfront area, the issuing authority shall presume that the area is significant to protect the private or public water supply; to protect the groundwater; to provide flood control; to prevent storm damage; to prevent pollution; to protect land containing shellfish; to protect wildlife habitat; and to protect fisheries.

The presumption is rebuttable and may be overcome by a clear showing that the riverfront area does not play a role in the protection of one or more of these interests. In the event that the presumption is deemed to have been overcome as to the protection of all the interests, the issuing authority shall make a written determination to this effect, setting forth its grounds on Form 6. Where the applicant provides information that the riverfront area at the site of the activity does not play a role in the protection of an interest, the issuing authority may determine that the presumption for that interest has been rebutted and the presumption of significance is partially overcome.

(4) General Performance Standard. Where the presumption set forth in 310 CMR 10.58(3) is not overcome, the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c.131 § 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. In the event that the presumption is partially overcome, the issuing authority shall make a written determination setting forth its grounds in the Order of Conditions and the partial rebuttal shall be taken into account in the application of 310 CMR 10.58 (4)(d)1.a. and c.; the issuing authority shall impose conditions in the Order that contribute to the protection of interests for which the riverfront area is significant.

(a) Protection of Other Resource Areas. The work shall meet the performance standards for all other resource areas within the riverfront area, as identified in 310 CMR 10.30 (coastal bank), 10.32 (salt marsh), 10.55 (Bordering Vegetated Wetland), and 10.57 (Land Subject to Flooding). When work in the riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of M.G.L. c. 131, § 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within the riverfront area.

(b) Protection of Rare Species. No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent.

(c) Practicable and Substantially Equivalent Economic Alternatives. There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131 § 40.

1. Definition of Practicable. An alternative is practicable and substantially equivalent economically if it is available and capable of being done after taking into consideration costs, existing technology, proposed use, and logistics, in light of overall project purposes. Available and capable of being done means the alternative is obtainable and feasible. Project purposes shall be defined generally (*e.g.*, single family home, residential subdivision, expansion of a commercial development). The alternatives analysis may reduce the scale of the activity or the number of lots available for development, consistent with the project purpose and proposed use. The alternatives analysis shall not include interior design specifications (*i.e.*, neither the proposed use or project purpose in the Notice of Intent nor the Order of Conditions should specify the number of rooms, bedrooms, etc. within a building). Transactions shall not be arranged to circumvent the intent of alternatives analysis review. The four factors to be considered are:

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a. Costs, and whether such costs are reasonable or prohibitive to the owner. The owner means the individual or entity which owns the area where the activity will occur or which will implement the project purpose. Cost includes expenditures for a project within the riverfront area, such as land acquisition, site preparation, design, construction, landscaping, and transaction expenses. Cost does not include anticipated profits after the project purpose is achieved or expenditures to achieve the project purpose prior to receiving an Order with the exception of land acquisition costs incurred prior to August 7, 1996. In taking costs into account, the issuing authority shall be guided by these principles:

i. The cost of an alternative must be reasonable for the project purpose, and cannot be prohibitive.

ii. Higher or lower costs taken alone will not determine whether an alternative is practicable. An alternative for proposed work in the riverfront area must be a practicable and substantially equivalent economic alternative (*i.e.*, will achieve the proposed use and project purpose from an economic perspective).

iii. In considering the costs to the owner, the evaluation should focus on the financial capability reasonably expected from the type of owner (*e.g.*, individual homeowner, residential developer, small business owner, large commercial or industrial developer) rather than the personal or corporate financial status of that particular owner. Applicants should not submit, nor should issuing authorities request, financial information of a confidential nature, such as income tax records or bank statements.

iv. Issuing authorities may require documentation of costs, but may also base their determinations on descriptions of alternatives, knowledge of alternative sites, information provided by qualified professionals, comparisons to costs normally associated with similar projects, or other evidence. Any documentation of costs should be limited to that required for a determination of whether the costs are reasonable or prohibitive.

b. Existing technology, which includes best available measures (*i.e.*, the most up-to-date technology or the best designs, measures, or engineering practices that have been developed and are commercially available);

c. The proposed use. This term is related to the concept of project purpose. In the context of typical single family homes, the project purpose (construction of a single family house) and proposed use (family home) are virtually identical. In the context of projects where the purpose implies a business component, such as residential subdivision, commercial, and industrial projects, the proposed use typically requires economic viability. Practicable and substantially equivalent economic alternatives include alternatives which are economically viable for the proposed use from the perspective of site location, project configuration within a site, and the scope of the project. In the context of publically financed projects, the proposed use includes consideration of legitimate governmental purposes (*e.g.*, protection of health and safety, providing economic development opportunities, or similiar public purposes.); and

d. Logistics. Logistics refers to the presence or absence of physical or legal constraints. Physical characteristics of a site may influence its development. Legal barriers include circumstances where a project cannot meet other applicable requirements to obtain the necessary permits at an alternative site. An alternative site is not practicable if special legislation or changes to municipal zoning would be required to achieve the proposed use or project purpose. An alternative is not practicable if the applicant is unable to obtain the consent of the owner of an alternative site for access for the purpose of obtaining the information required by the Notice of Intent or of allowing the issuing authority to conduct a site visit.

2. Scope of Alternatives. The scope of alternatives under consideration shall be commensurate with the type and size of the project. The issuing authority shall presume that alternatives beyond the scope described below are not practicable and therefore need not be considered. The issuing authority or another party may overcome the presumption by demonstrating the practicability of a wider range of alternatives, based on cost, and whether the cost is reasonable or prohibitive to the owner; existing technology; proposed use; and logistics in light of the overall project purpose.

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a. The area under consideration for practicable alternatives is limited to the lot for activities associated with the construction or expansion of a single family house on a lot recorded on or before August 1, 1996.

b. The area under consideration for practicable alternatives is limited to the lot, the subdivided lots and any adjacent lots formerly or presently owned by the same owner for:

i. activities associated with the construction or expansion of a single family house on a lot recorded after August 1, 1996;

ii. any expansion of an existing structure, including enlargement of the footprint of any structure or the addition of associated structures for single family homes (*e.g.*, a garage) on lots recorded after August 1, 1996;

iii. any activity other than the construction or expansion of a single family house where the applicant owned the lot before August 7, 1996, including the creation of a real estate subdivision but excluding public projects, and the applicant will implement the project purpose;

iv. new agriculture or aquaculture projects;

v. any activity by a public entity when funds for the purchase of the site for the project purpose have been appropriated through action of the appropriate municipal board or state agency prior to the August 7, 1996; or

vi. any lot shown on a definitive subdivision plan approved under M.G.L. c. 41, §§ 81K to 81GG, provided there is a recorded deed restriction limiting the total alteration to 5000 square feet or 10%, whichever is greater, of the riverfront area allocated to the lots within the entire subdivision.

c. Except as allowed under 310 CMR 10.58(4)(c)2.b., the area under consideration for practicable alternatives extends to the original parcel and the subdivided parcels, any adjacent parcels, and any other land which can reasonably be obtained within the municipality for:

i. activities associated with residential subdivision or housing complexes, institutional, industrial, or commercial projects; or

ii. activities conducted by municipal government.

For adjacent lots, reasonably be obtained means to purchase at market prices if otherwise practicable, as documented by offers (and any responses). For other land, reasonably be obtained means adequate in size to accommodate the project purpose and listed for sale within appropriately zoned areas, at the time of filing a Request for Determination or Notice of Intent, within the municipality.

d. Alternatives extend to any sites which can reasonably be obtained within the appropriate region of the state for:

i. residential, institutional, commercial, or industrial activities required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under M.G.L. c. 30, §§ 61 through 62H, or an alternatives analysis conducted by the Corps of Engineers for a Section 404 permit under the federal Clean Water Act, 33 U.S.C. 1251 *et seq.*, and used for 401 Water Quality Certification under 314 CMR 9.00; or

ii. activities conducted by district, county, state or federal government entities.

The area to be considered is the service area within the governmental unit boundary or jurisdictional authority, or the municipality if there is no defined service area, consistent with the project purpose.

3. Evaluation of Alternatives. The applicant shall demonstrate that there are no practicable and substantially equivalent economic alternatives as defined in 310 CMR 10.58(4)(c)1., within the scope of alternatives as set forth in 310 CMR 10.58(4)(c)2., with less adverse effects on the interests identified in M.G.L. c. 131 § 40. The applicant shall submit information to describe sites and the work both for the proposed location and alternative site locations and configurations sufficient for a determination by the issuing authority under 310 CMR 10.58(4)(d). The level of detail of information shall be commensurate with the scope of the project and the practicability of alternatives. Where an applicant identifies an alternative which can be summarily demonstrated to be not practicable, an evaluation is not required.

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The purpose of evaluating project alternatives is to locate activities so that impacts to the riverfront area are avoided to the extent practicable. Projects within the scope of alternatives must be evaluated to determine whether any are practicable. As much of a project as feasible shall be sited outside the riverfront area. If siting of a project entirely outside the riverfront area is not practicable, the alternatives shall be evaluated to locate the project as far as possible from the river.

The issuing authority shall not require alternatives which result in greater or substantially equivalent adverse impacts. If an alternative would result in no identifiable difference in impact, the issuing authority shall eliminate the alternative. If there would be no less adverse effects on the interests identified in M.G.L. c. 131, § 40, the proposed project rather than a practicable alternative shall be allowed, but the criteria in 310 CMR 10.58(4)(d) for determining no significant adverse impact must still be met. If there is a practicable and substantially equivalent economic alternative with less adverse effects, the proposed work shall be denied and the applicant may either withdraw the Notice of Intent or receive an Order of Conditions for the alternative, provided the applicant submitted sufficient information on the alternative in the Notice of Intent.

(d) No Significant Adverse Impact. The work, including proposed mitigation measures, must have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131, § 40.

1. Within 200 foot riverfront areas, the issuing authority may allow the alteration of up to 5000 square feet or 10% of the riverfront area within the lot, whichever is greater, on a lot recorded on or before October 6, 1997 or lots recorded after October 6, 1997 subject to the restrictions of 310 CMR 10.58(4)(c)2.b.vi., or up to 10% of the riverfront area within a lot recorded after October 6, 1997, provided that:

a. At a minimum, a 100 foot wide area of undisturbed vegetation is provided. This area shall extend from mean annual high-water along the river unless another location would better protect the interests identified in M.G.L. c. 131 § 40. If there is not a 100 foot wide area of undisturbed vegetation within the riverfront area, existing vegetative cover shall be preserved or extended to the maximum extent feasible to approximate a 100 foot wide corridor of natural vegetation. Replication and compensatory storage required to meet other resource area performance standards are allowed within this area; structural stormwater management measures may be allowed only when there is no practicable alternative. Temporary impacts where necessary for installation of linear site-related utilities are allowed, provided the area is restored to its natural conditions. Proposed work which does not meet the requirement of 310 CMR 10.58(4)(d)1.a. may be allowed only if an applicant demonstrates by a preponderance of evidence from a competent source that an area of undisturbed vegetation with an overall average width of 100 feet will provide equivalent protection of the riverfront area, or that a partial rebuttal of the presumptions of significance is sufficient to justify a lesser area of undisturbed vegetation;

b. Stormwater is managed according to standards established by the Department.

c. Proposed work does not impair the capacity of the riverfront area to provide important wildlife habitat functions. Work shall not result in an impairment of the capacity to provide vernal pool habitat identified by evidence from a competent source, but not yet certified. For work within an undeveloped riverfront area which exceeds 5,000 square feet, the issuing authority may require a wildlife habitat evaluation study under 310 CMR 10.60.

d. Proposed work shall not impair groundwater or surface water quality by incorporating erosion and sedimentation controls and other measures to attenuate nonpoint source pollution.

The calculation of square footage of alteration shall exclude areas of replication or compensatory flood storage required to meet performance standards for other resource areas, or any area of restoration within the riverfront area. The calculation also shall exclude areas used for structural stormwater management measures, provided there is no practicable alternative to siting these structures within the riverfront area and provided a wildlife corridor is maintained (e.g. detention basins shall not be fenced).

2. Within 25 foot riverfront areas, any proposed work shall cause no significant adverse impact by:

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a. Limiting alteration to the maximum extent feasible, and at a minimum, preserving or establishing a corridor of undisturbed vegetation of a maximum feasible width. Replication and compensatory storage required to meet other resource area performance standards are allowed within this area; structural stormwater management measures shall be allowed only when there is no practicable alternative;

b. Providing stormwater management according to standards established by the Department;

c. Preserving the capacity of the riverfront area to provide important wildlife habitat functions. Work shall not result in an impairment of the capacity to provide vernal pool habitat when identified by evidence from a competent source but not yet certified; and

d. Proposed work shall not impair groundwater or surface water quality by incorporating erosion and sedimentation controls and other measures to attenuate nonpoint source pollution.

3. Notwithstanding the provisions of 310 CMR10.58(4)(d)1. or 2., the issuing authority shall allow the construction of a single family house, a septic system if no sewer is available, and a driveway, on a lot recorded before August 7, 1996 where the size or shape of the lot within the riverfront area prevents the construction from meeting the requirements of 310 CMR 10.58(4)(d)1. or 2., provided that:

a. The lot can be developed for such purposes under the applicable provisions of other municipal and state law; and

b. The performance standards of 310 CMR 10.58(4)(d) are met to the maximum extent feasible. In difficult siting situations, the maximum extent of yards around houses should be limited to the area necessary for construction. Except where the lot contains vernal pool habitat or specified habitat sites of rare species, a wildlife habitat evaluation study shall not be required.

4. Notwithstanding the provisions of 310 CMR 10.58(4)(d)1. or 2., the issuing authority may allow the construction of a commercial structure of minimum feasible dimension, on a lot recorded before August 7, 1996 where the size or shape of the lot within the riverfront area prevents the construction from meeting the requirements of 310 CMR 10.58(4)(d)1. or 2., only if:

a. The lot can be developed for such purposes and cannot be developed for any other purposes under the applicable provisions of other municipal and state law;

b. The work is not eligible for 310 CMR 10.58(5); and

c. The performance standards of 310 CMR 10.58(4)(d)1. or 2. are met to the maximum extent feasible.

(5) Redevelopment Within Previously Developed Riverfront Areas; Restoration and Mitigation. Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or reuse of degraded or previously developed areas. A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds. Work to redevelop previously developed riverfront areas shall conform to the following criteria:

(a) At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58(4) shall be met.

(b) Stormwater management is provided according to standards established by the Department.

(c) Within 200 foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing conditions within 25 foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).

(d) Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).

(e) The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).

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(f) When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Restoration shall include:

1. removal of all debris, but retaining any trees or other mature vegetation;
2. grading to a topography which reduces runoff and increases infiltration;
3. coverage by topsoil at a depth consistent with natural conditions at the site; and
4. seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site;

(g) When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184, §§ 31 to 33 to preserve undisturbed riverfront areas that could be otherwise altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131, § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a River Basin Plan approved by the Secretary of the Executive Office of Environmental Affairs.

(h) The issuing authority shall include a continuing condition in the Certificate of Compliance for projects under 310 CMR 10.58(5)(f) or (g) prohibiting further alteration within the restoration or mitigation area, except as may be required to maintain the area in its restored or mitigated condition. Prior to requesting the issuance of the Certificate of Compliance, the applicant shall demonstrate the restoration or mitigation has been successfully completed for at least two growing seasons.

(6) Notwithstanding the provisions of 310 CMR 10.58(1) through (5), certain activities or areas are grandfathered or exempted from requirements for the riverfront area:

(a) Any excavation, structure, road, clearing, driveway, landscaping, utility line, rail line, airport owned by a political subdivision, marine cargo terminal owned by a political subdivision, bridge over two miles long, septic system, or parking lot within the riverfront area in existence on August 7, 1996. Maintenance of such structures or areas is allowed (including any activity which maintains a structure, roads (limited to repairs, resurfacing, repaving, but not enlargement), clearing, landscaping, etc. in its existing condition) without the filing of a Notice of Intent for work within the riverfront area, but not when such work is within other resource areas or their buffer zones except as provided in 310 CMR 10.58(6)(b). Changes in existing conditions which will remove, fill, dredge or alter the riverfront area are subject to 310 CMR 10.58, except that the replacement within the same footprint of structures destroyed by fire or other casualty is not subject to 310 CMR 10.58.

(b) Certain minor activities, provided the activity is not within any other resource area:

1. Unpaved pedestrian walkways for private use;
2. Fencing, provided it will not constitute a barrier to wildlife movement; stonewalls; stacks of cordwood;
3. Vista pruning, provided the activity is located more than 50 feet from the mean annual high water line within a riverfront area or from bordering vegetated wetland, whichever is farther. (Pruning of landscaped areas is not subject to jurisdiction under 310 CMR 10.00.);
4. Plantings of native species of trees, shrubs, or groundcover, but excluding turf lawns;

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5. The conversion of lawn to uses accessory to existing single family houses in existence on August 7, 1996, such as decks, sheds, patios, and pools, provided the activity is located more than 50 feet from the mean annual high-water line within the riverfront area or from bordering vegetated wetland, whichever is farther, and erosion and sedimentation controls are implemented during construction. The conversion of such uses accessory to existing single family houses to lawn is also allowed. (Mowing of lawns is not subject to jurisdiction under 310 CMR 10.00);

6. The conversion of impervious to vegetated surfaces, provided erosion and sedimentation controls are implemented during construction; and

7. Activities that are temporary in nature, have negligible impacts, and are necessary for planning and design purposes (*e.g.*, installation of monitoring wells, exploratory borings, sediment sampling and surveying).

Activities not meeting the requirements of 310 CMR 10.58(6)(b) may be allowed through a Determination of Applicability or a Notice of Intent. If resource area boundaries are uncertain, a Request for Determination of Applicability or Notice of Intent should be filed.

(c) On-site sewage disposal systems in existence on August 7, 1996 and the repair or upgrade of existing systems in compliance with 310 CMR 15.000. New construction of a system under 310 CMR 15.000 must comply with 310 CMR 10.58, subject to the presumption for the siting of systems in 310 CMR 10.03.

(d) The expansion of structures, airports, and marine cargo terminals, provided they are owned by a political subdivision and the expansion activity was physically begun on or before November 1, 1996.

(e) Projects for which a draft environmental impact report was prepared and submitted pursuant to M.G.L. c. 30, § 62B, on or before November 1, 1996, or as extended by the Department for just cause but no later than December 31, 1996.

(f) Projects for which a building permit conforming to local requirements was filed on or before October 1, 1996 and granted on or before April 1, 1997, or as extended by the conservation commission for just cause by no more than 60 days.

(g) The road and infrastructure shown on a definitive subdivision plan approved or endorsed under M.G.L. c. 41, § 81U, on or before August 1, 1996. Activities on the subdivided lots are subject to 310 CMR 10.58 unless they received a building permit under 310 CMR 10.58(6)(f).

(h) Construction, expansion, repair, restoration, alteration, replacement, operation and maintenance of public or private local or regional wastewater treatment plants and their related structures, conveyance systems, and facilities, including utility lines.

(i) Structures and activities subject to a M.G.L. c. 91 waterways license or permit, or authorized prior to 1973 by a special act, are exempt, provided the structure or activity is subject to jurisdiction and obtains a license, permit, or authorization under 310 CMR 9.00.

(j) Activities within riverfront areas subject to a protective order under M.G.L. c. 21, § 17B, the Scenic Rivers Act.

(k) Activities on land occupied by historic mill complexes.

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10.59: Estimated Habitats of Rare Wildlife (for inland wetlands)

If a project is within estimated habitat which is indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetlands Wildlife (if any) published by the Natural Heritage and Endangered Species Program (hereinafter referred to as the Program), a fully completed copy of the Notice of Intent (including all plans, reports, and other materials required under 310 CMR 10.05(4)(a) & (b)) for such project shall be sent to the Program via the U.S. Postal Service by express or priority mail (or otherwise sent in a manner that guarantees delivery within two days). Such copy shall be sent no later than the date of the filing of the Notice of Intent with the issuing authority. Proof of timely mailing or other delivery to the Program of the copy of such Notice of Intent shall be included in the Notice of Intent which is submitted to the issuing authority and sent to the Department's regional office.

Estimated Habitat Maps shall be based on the estimated geographical extent of the habitats of all state-listed vertebrate and invertebrate animal species for which a reported occurrence within the last 25 years has been accepted by the Program and incorporated into its official data base.

10.59: continued

Within 30 days of the filing of such a Notice of Intent with the issuing authority the Program shall determine whether any state-listed species identified on the aforementioned map are likely to continue to be located on or near the site of the original occurrence and, if so, whether the area to be altered by the proposed project is in fact part of such species' habitat. Such determination shall be presumed by the issuing authority to be correct. Any proposed project which would alter a resource area that is not located on the most recent Estimated Habitat Map (if any) provided to the conservation commission, shall be presumed not to be within a rare species' habitat. Both of these presumptions are rebuttable and may be overcome upon a clear showing to the contrary. If the issuing authority fails to receive a response from the Program within 30 days of the filing of such a Notice of Intent, a copy of which was received by the Program in a timely manner, it shall issue its Order of Conditions based on available information; however, the fact that a proposed project would alter a resource area that is located on an Estimated Habitat Map shall not be considered sufficient evidence in itself that such project is in fact within the habitat of a rare species.

If the Program determines that a resource area which would be altered by a proposed project is in fact within the habitat of a state-listed species, it shall provide in writing to the applicant and to the Conservation Commission and the Department, the identification of the species whose habitat would be altered by the proposed project, and all other relevant information which the Program has regarding the species' location and habitat requirements, insofar as such information may assist the applicant and the issuing authority to determine whether the project is or can be designed so as to meet the performance standard set in 310 CMR 10.59.

Notwithstanding 310 CMR 10.53 through 10.58 and 310 CMR 10.60, if a proposed project is found by the issuing authority to alter a resource area which is part of the habitat of a state-listed species, such project shall not be permitted to have any short or long term adverse effects on the habitat of the local population of that species. A determination of whether or not a proposed project will have such an adverse effect shall be made by the issuing authority. However, a written opinion of the Program on whether or not a proposed project will have such an adverse effect shall be presumed by the issuing authority to be correct. This presumption is rebuttable and may be overcome upon a clear showing to the contrary.

The conservation commission shall not issue an Order of Conditions under 310 CMR 10.05(6) regarding any such project for at least 30 days after the filing of the Notice of Intent unless the Program before such time period has elapsed has either determined that the resource area(s) which would be altered by the project is not in fact within the habitat of a state-listed species or, if it has determined that such resource area(s) is in fact within rare species habitat, rendered a written opinion as to whether the project will have an adverse effect on that habitat.

Notwithstanding any other provision of 310 CMR 10.58, should an Environmental Impact Report be required for a proposed project under the M.G.L. c. 30, §§ 6 through 62H, as determined by 301 CMR 11.00 the performance standard established under 310 CMR 10.58 shall only apply to proposed projects which would alter the habitat of a rare species for which an occurrence has been entered into the official data base of the Massachusetts Natural Heritage and Endangered Species Program prior to the time that the Secretary of the Executive Office of Environmental Affairs has determined, in accordance with the provisions of 301 CMR 11.09(4), that a final Environmental Impact Report for that project adequately and properly complies with the M.G.L. c. 30, §§ 6 through 62H (unless, subsequent to that determination, the Secretary requires supplemental information concerning state-listed species, in accordance with the provisions of 301 CMR 11.17).

10.60: Wildlife Habitat Evaluations

(1) Measuring Adverse Effects on Wildlife Habitat

(a) To the extent that a proposed project on inland Banks, Land Under Water, Riverfront Area, or Land Subject to Flooding will alter vernal pool habitat or will alter other wildlife habitat beyond the thresholds permitted under 310 CMR 10.54(4)(a)5., 10.56(4)(a)4., 10.57(4)(a)3. and 10.58(4)(d)1., such alterations may be permitted only if they will have no adverse effects on wildlife habitat. Adverse effects on wildlife habitat mean the alteration of any habitat characteristic listed in 310 CMR 10.60(2), insofar as such alteration will, following two growing seasons of project completion and thereafter (or, if a project would eliminate trees, upon the maturity of replanted saplings) substantially reduce its capacity to provide the important wildlife habitat functions listed in 310 CMR 10.60(2). Such performance standard, however, shall not apply to the habitat of rare species, which are covered by the performance standards established under 310 CMR 10.59.

10.60: continued

(b) An evaluation by the applicant of whether a proposed project will have an adverse effect on wildlife habitat beyond permissable thesholds shall be performed by an individual with at least a masters degree in wildlife biology or ecological science from an accredited college or university, or other competent professional with at least two years experience in wildlife habitat evaluation.

(c) Any wildlife habitat management practices conducted by the Division of Fisheries and Wildlife, and any wildlife management practices of any individual or organization if reviewed and approved in writing by said Division, shall be presumed to have no adverse effect on wildlife habitat. Such presumption is rebuttable, and may be overcome by a clear showing to the contrary.

(2) Wildlife Habitat Characteristics of Inland Resource Areas:

(a) Banks. The topography, soil structure, and plant community composition and structure of banks can provide the following important wildlife habitat functions:

1. Food, shelter and migratory and breeding areas for wildlife
2. Overwintering areas for mammals and reptiles.

(b) Land Under Water Bodies or Waterways. The plant community and soil composition and structure, hydrologic regime, topography and water quality of land under water bodies or waterways can provide the following important wildlife habitat functions:

1. Food, shelter and breeding areas for wildlife;
2. Overwintering areas for mammals, reptiles and amphibians.

(c) Vernal Pool Habitat. The topography, soil structure, plant community composition and structure, and hydrologic regime of vernal pool habitat can provide the following important wildlife habitat functions:

1. Food, shelter, migratory and breeding areas, and overwintering areas for amphibians;
2. Food for other wildlife.

(d) Lower Floodplains. The hydrologic regime, plant community and soil composition and structure, topography, and proximity to water bodies and waterways of lower floodplains can provide the following important wildlife habitat functions:

1. Food, shelter, migratory and overwintering areas for wildlife;
2. Breeding areas for birds, mammals and reptiles.

(e) Riverfront Area. The topography, soil structure, plant community composition and structure, and hydrologic regime can provide the following important wildlife habitat functions:

1. Food, shelter, overwintering and breeding areas for wildlife, including turtle nesting areas, nesting sites for birds which typically reuse specific nesting sites, cavity trees, and isolated depressions that function as vernal pools.
2. Migratory areas along the riparian corridor including the movement of wildlife unimpeded by barriers within the riverfront area.

(3) Restoration and Replication of Altered Habitat. Alterations of wildlife habitat characteristics beyond permissible thresholds may be restored onsite or replicated offsite in accordance with the following general conditions, and any additional conditions the issuing authority deems necessary to insure that the standard in 310 CMR 10.60(1)(a) is satisfied:

(a) the surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area");

(b) the elevation of groundwater relative to the surface of the replacement area shall be approximately equal to that of the lost area;

(c) the replacement area shall be located within the same general area as the lost area. In the case of banks and land under water, the replacement area shall be located on the same water body or waterway if the latter has not been rechanneled or otherwise relocated. In the case of bordering land subject to flooding, the replacement area shall be located approximately the same distance from the water body or waterway as the lost area. In the case of vernal pool habitat, the replacement area shall be located in close proximity to the lost area;

(d) interspersion and diversity of vegetation, water and other wildlife habitat characteristics of the replacement area, as well as its location relative to neighboring wildlife habitats, shall be similar to that of the lost areas, insofar as necessary to maintain the wildlife habitat functions of the lost area;

10.60: continued

(e) the project shall not alter ten or more acres of Land Subject to Flooding or Land Under Water found to be significant to the protection of wildlife habitat, or 2,000 feet or more of Bank found to be significant to the protection of wildlife habitat (in the case of a bank of a stream or river, this shall be measured on each side of said stream or river).

(f) if the replacement area is located in an area subject to M.G.L. c. 131, § 40, there shall be no adverse effect on the existing important wildlife habitat functions of said area as measured by the standards of 310 CMR 10.60;

(g) the "thresholds" established in 310 CMR 10.54(4)(a)5., 10.56(4)(a)4., 10.57(4)(a)3. and 10.58(4)(d)1.c. (below which alterations of resource areas are not deemed to impair capacity to provide important wildlife habitat functions) shall not apply to any replacement area; and

(h) the replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in 310 CMR 10.51 through 10.60.

REGULATORY AUTHORITY

310 CMR 10.00: M.G.L. c. 131, § 40.

(PAGES 407 THROUGH 440 ARE RESERVED FOR FUTURE USE.)

wetlands

In the Year One Thousand Nine Hundred and Ninety-Six AN ACT PROVIDING PROTECTION FOR THE RIVERS OF COMMONWEALTH.

Whereas, The deferred operation of this act would tend to defeat its pur which is to immediately protect the commonwealth's rivers, streams and adjacent lands, therefore it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

Be it enacted by the Senate and House of Representatives in General C assembled, and by the authority of the same, as follows:

SECTION 1. The purposes of this act are to protect the private or public supply; to protect the ground water; to provide flood control; to prevent s damage; to prevent pollution; to protect land containing shellfish; to prot wildlife habitat; and to protect the fisheries.

It shall be the policy of the commonwealth to protect the natural integrity rivers; provided, however, that, the commonwealth shall, subject to appropriation, encourage and support the establishment of a system of space lands along the rivers as defined herein consistent with the purpo this act. This act shall be interpreted and administered consistent with its purposes as stated in this section.

Nothing in the act shall be construed to compromise or in any way dimini the projections and exemptions provided for in section forty of chapter o hundred and thirty-one of the General Laws and regulations promulgate thereunder; and provided further, that such projections and exemptions extend to the riverfront area as defined in this act.

SECTION 2. EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS. Department of Fisheries, Wildlife and Environmental Law Enforcement

2300-8970 For the acquisition of lands fronting on rivers and streams pu to section eight of this act..$30,000,000

SECTION 3. Notwithstanding the provisions of any general or special la any rule or regulation to the contrary, activities associated with the renov

of cranberry bogs on property currently in agricultural use, which have b abandoned since nineteen hundred and fifty-nine shall be allowed as pr below not to exceed five acres in three years on land in common owners provided, however, that renovation of such bogs shall not adversely imp habitat of endangered or threatened species as defined by the Natural Heritage and Endangered Species Program, be located within a defined II aquifer, be located within an area of critical environmental concern, or contain a navigable stream as defined by chapter ninety-one. All activitie shall be conducted in accordance with USDA Natural Resources Conser Service standards and Best Management Practices for Massachusetts Cranberry Experiment Station and approved by the USDA Natural Reso Conservation Service, where applicable. The cranberry farm shall have i place a USDA Natural Resources Conservation Service approved Conservation Farm Plan prior to the commencement of renovation of sai abandoned bogs.

The department of environmental protection shall implement by regulatio later than December first, nineteen hundred and ninety-six, the provision this section providing for a permit process for the review and necessary conditioning for the renovation of eligible abandoned cranberry bogs as defined herein and for appropriate fees and performance standards relat thereto; said regulations shall provide that review for such permits shall consider the provisions in this section and the impacts of the renovation; department is authorized to issue as apart of any reviews pursuant to thi section, such conditions as are necessary to protect the interests identifi this act.

The department of environmental protection is directed to undertake a re and prepare an inventory of abandoned cranberry bogs in the commonw which have been abandoned since nineteen hundred and fifty-nine and r to the joint committee on natural resources and agriculture such informat December first, nineteen hundred and ninety-six, including in such report appropriate recommendations on the feasibility and impacts to the environment of authorizing for renovation said abandoned cranberry bog has inventoried pursuant to this paragraph.

Nothing in this section shall supersede the powers of any city or town to regulate the renovation of abandoned bogs.

SECTION 4. The commissioner of the department of environmental prot shall, within one year of the effective date of this act, adopt such regulati as are deemed necessary to carry out the purposes of this act. Such regulations shall include, but not be limited to, provisions setting forth (1) procedures required to implement this act, and (2) reasonable fees to be charged by local bodies in administering the terms of this act. All final rul and regulation promulgated hereunder shall be filed with the joint commi on natural resources and agriculture sixty days prior to their effective dat all emergency rules and regulations promulgated hereunder shall be file said committee fourteen days prior to their effective date.

SECTION 5. Nothing in this act shall be construed to supersede the prov of section sixty-one and sixty-two of chapter thirty, chapter ninety-one, a chapter one hundred thirty-n ine A of the General Laws and chapter thirt of the acts of nineteen hundred and ninety-two or any regulations promu thereunder.

Nothing in this act shall apply to the portions of any river or adjacent lan are covered by a protective order pursuant to section seventeen B of ch twenty-one.

SECTION 6. The provisions of this act shall not apply to any excavation, structure, road, clearing, driveway, landscaping, utility lines, rail lines, air and marine cargo terminals owned by a political subdivision of the commonwealth and any bridge over two miles long, septic system, or pa lot within the riverfront area in existence on the date of enactment of this nor shall the provisions of this act apply to the expansion of any structur airports and marine cargo terminals owned by a political subdivision whi expansion has commenced on or before November first, nineteen hundr and ninety-six, or for which any of the following conditions have been me draft environmental impact report has been prepared and submitted purs to section sixty-two B of chapter thirty of the General Laws on or before November first, nineteen hundred and ninety-six, (ii) a building permit conforming to local requirement has been filed for on or before October f nineteen hundred and ninety-six and said permit is granted on or before first, nineteen hundred and ninety-seven or (iii) a definitive plan has bee approved or endorsed under section eighty-one U of chapter forty-one of General Laws on or before August first, nineteen hundred and ninety-six the written request of the applicant and for just cause, the department of environmental protection may grant an extension from the time limit und clause (i) and upon written request of an applicant and for just cause, a l conservation commission may grant one extension of no more than sixty from the time limit under clause (ii).

SECTION 7. The executive office of environmental affairs and the depart of housing and community development shall study jointly the feasibility establishing transferable development rights. Said study shall include, b be limited to, the use of riverfront and other transferable rights to increas intensity of use, density of clustering of units, amount of floor area, or pe of lot coverage, above that which would otherwise be permissible on lan within the riverfront area. Said study shall examine how such rights may based on the impact of any restrictions on land use development which the result of the application of this act. The executive office of environme affairs and the department of housing and community development shall submit the report to the joint committee on natural resources and agricult no later than one year following the adoption of regulations under this ac

SECTION 8. The commissioner of the department of fisheries, wildlife a environmental law enforcement is hereby authorized to expend a sum n exceed thirty million dollars for the acquisition of lands fronting on rivers streams, including cold water streams; provided, that said commissioner give priority to linking segmented portions of land along rivers; provided, however, that not more than one million dollars shall be expended for th purchase, but not construction or maintenance costs, of fencing, posts o other materials for the purpose of mitigating non-point pollution in rivers defined herein within existing farmland; provided further, that the depart of environmental protection shall recommend locations for such mitigatio measures to mitigate such non-point pollution to the department of food agriculture which administers said funds, and provided further that any la acquired pursuant to this section shall be open to the public for hunting, fishing, and trapping unless otherwise specified to the contrary by the executive office of environmental affairs pursuant to section sixty of chap fifteen of the acts of nineteen hundred and ninety-six. The amount hereb

authorized is to be in addition to any funds previously authorized for this purpose, including, but not limited to, monies authorized pursuant to sect twenty-nine of chapter five hundred and sixty-four of the acts of nineteen hundred and eighty-seven and chapter fifteen of the acts of nineteen hu ninety-six.

SECTION 9. To meet the expenditures necessary in carrying out the provisions of section two of this act, the state treasurer shall, upon reque the governor, issue and sell bonds of the commonwealth in an amount t specified by the governor from time to time, but not exceeding in the aggregate, the sum of thirty million dollars. All bonds issued by the commonwealth, as aforesaid, shall be designated on their face, River La Acquisition Loan, Act of 1996, and shall be issued for such maximum ter years, not exceeding twenty years, as the governor may recommend to t general court pursuant to Section 3 of Article LXII of the Amendments to Constitution of the Commonwealth; provided, however, that all such bon shall be payable not later than June thirtieth, two thousand and twenty-o interest and payments on account of principal and such obligation shall payable from the General Fund. Bonds and interest thereon issued unde authority of this section, notwithstanding any other provisions of this act, be general obligations of the commonwealth.

SECTION 10. The state treasurer may borrow from time to time on the c of the commonwealth such sums of money as may be necessary for the purposes of meeting payments as authorized by section two of this act, may issue and renew from time to time notes of the commonwealth ther bearing interest payable at such time and at such rate as shall be fixed b state treasurer. Such notes shall be issued and may be renewed one or times for such terms, not exceeding one year, as the governor may recommend to the general court in accordance with Section 3 of Article the Amendments to the Constitution of the Commonwealth, but the final maturities of such notes, whether original or renewal, shall not be later th June thirtieth, two thousand and one. Notes and the interest thereon iss under the authority of this act, notwithstanding any other provisions of thi shall be general obligations of the commonwealth.

SECTION 11. There is hereby established a riverfront advisory committe the purpose of participating in the review of the rules and regulations promulgated pursuant to the provisions of section four of this act. Said advisory committee shall consist of eight members appointed by the commissioner of the department of environmental protection, four of who shall represent environmental organizations, one of which shall represen real estate community, one of which shall be a developer, one of which s be represent the agriculture community, and one of which shall represen aquaculture community. At least two of the members, one from an environmental organization and one other appointee from other than an environmental organization, shall own or have an interest in land located riverfront area as defined by this act. Meetings of the advisory committe be at the discretion of said commissioner; provided, however, that the committee shall meet at least four times in the first twelve months after t effective date of this act, and at least once annually thereafter. Said commissioner may dissolve the advisory committee following the adoptio regulations for chapter one hundred and thirty-one B of the General Law any time thereafter.

SECTION 12. The executive office of environmental affairs is hereby

authorized and directed to develop a twenty-five year plan to protect the natural integrity of the rivers of the commonwealth, and to acquire open lands fronting rivers and streams; provided, further, that said plan shall b submitted to the joint committee on natural resources and agriculture an house and senate committees on ways and means no later than Januar thirty- first nineteen hundred and ninety-seven.

SECTION 13. An amount no less than one hundred thousand dollars pe for a period up to five years shall be expended from funds controlled by t trust fund, established by section seven of chapter two hundred and thirt of the acts of nineteen hundred and eighty-eight for the use by the depar of environmental protection for technical assistance and training for conservation commission for the purposes of this act; provided, further, t the department of environmental protection shall receive support in the development and provisions of such technical assistance and training fro Massachusetts Soil and Water Conservation Districts, Coastal Zone Management, the Department of Fisheries, Wildlife and Environmental L Enforcement, the Department of Food and Agriculture, and the Departm Environmental Management.

SECTION 14. Notwithstanding any general or special law or rule or regul to the contrary, any construction, expansion, repair, restoration, alteratio replacement, operation and maintenance of public or private local or regi wastewater treatment plants and their related structures, conveyance systems, and facilities, including utility lines shall be exempt from the provisions of this act.

SECTION 15. Section 8C of chapter 40 of the General Laws, as appeari the 1994 Official Edition, is hereby amended by inserting before the penultimate sentence the following sentence: - Prior to the adoption of a rule or regulation which seeks to further regulate matters established by section forty of chapter one hundred and thirty-one or regulations authori thereunder relative to agricultural or aquacultural practice, the commissi shall, no later than seven days prior to the commission's public hearing o adoption of said rules and regulations, give notice of the said proposed r and regulations to the farmland advisory board established pursuant to s forty of chapter one hundred and thirty-one.

SECTION 16. Section 5 of chapter 40A of the General Laws, as so appe is hereby amended by inserting after the second paragraph the following paragraph:-

Prior to the adoption of any zoning ordinance or by-law or amendment th which seeks to further regulate matters established by section forty of ch one hundred and thirty-one or regulations authorized thereunder relative agricultural and aquacultural practices, the city or town clerk shall, no lat than seven days prior to the city council's or town meeting's public heari relative to the adoption of said new or amended zoning ordinances or by give notice of the said proposed zoning ordinances or by-laws to the far advisory board established pursuant to section forty of chapter one hund and thirty-one.

SECTION 17. Section 40 of chapter 131 of the General Laws, as so appearing, is hereby amended by inserting after the "bank", in line 1, the following words: - , riverfront area.

SECTION 18. Said section 40 of said chapter 131, as so appearing, is h further amended by inserting after the eleventh paragraph the following f paragraphs:-

The term "Densely developed areas", as used in this section shall mean, area of ten acres or more that is being utilized, or includes existing vaca structures or vacant lots formerly utilized as of January first, nineteen hu and forty-four or sooner for, intensive industrial, commercial, institutional residential activities or combinations of such activities, including, but not limited to the following: manufacturing, fabricating, wholesaling, warehou or other commercial or industrial activities; retail trade and service activiti medical and educational institutions; residential dwelling structures at a density of three or more per two acres; and mixed or combined patterns above. Designation of a densely developed area is subject to the secret the executive office of environmental affair's approval of a city or town's request for such designation. Land which is zoned for intensive use but i being utilized for such use as of January first, nineteen hundred and nin seven or which has been subdivided no later than May first, nineteen hu and ninety-six shall not be considered a densely developed area for the purposes of this chapter.

The term "Mean annual high-water line", as used in this section, shall m with respect to a river, the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged pres of water and which distinguishes between predominantly aquatic and predominantly terrestrial land. The mean high tide line shall serve as the annual high water line for tidal rivers.

The term "River", as used in this section, shall mean a natural flowing bo water that empties to any ocean, lake, or other river and which flows throughout the year.

The term "Riverfront area", as used in this section, shall mean that area land situated between a river's mean annual high- water line and a parall located two hundred feet away, measured outward horizontally from the mean annual high- water line. This definition shall not create a buffer zo called, beyond such riverfront area. Riverfront areas within municipalities (i) a population of ninety thousand or more persons or (ii) a population d greater than nine thousand persons per square mile, as determined by t nineteen hundred and ninety federal census; (iii) that are within densely developed areas as defined herein; (iv) land in Waltham between the Ch river on the north, and the Crescent street and Pine street on the south, the intersection of the Charles river and a line extended from the center l Walnut street on the west, and the railroad right-of-way now or formerly Boston and Maine Railroad on the east; or (v) property located in the to Milton shown on Milton assessors Map G, Block 56, Lot 13, located on 2 Granite Avenue shall be defined as that area of land situated between a mean annual high-water line and a parallel line located twenty-five feet a measured outward horizontally, from the river's mean annual high-water The riverfront area shall not include land now or formerly associated with historic mill complexes including, but not limited to, the mill complexes in Cities of Holyoke, Taunton, Fitchburg, Haverhill, Methuen and Medford i existence prior to nineteen hundred and forty-six and situated landward waterside facade of a retaining wall, building, sluiceway, or other structur existing on the effective date of this act. The riverfront area shall not app any mosquito control work done under the provisions of clause (36) of s

five of chapter forty, of Chapter two hundred and fifty-two or of any speci or to forest harvesting conducted in accordance with a cutting plan appr by the department of environmental management, under the provisions sections forty to forty-six, inclusive, of chapter one hundred and thirty-tw shall not include any area beyond one hundred feet of river's mean annu high water mark; in which maintenance of drainage and flooding system cranberry bogs occurs; in which agricultural land use or aquacultural use occur; to construction, expansion, repair, maintenance or other work on docks, wharves, boat houses, coastal engineering structures, landings, other structures and activities subject to licensing or permitting under ch ninety-one and its regulations; provided that such structures and activitie shall remain subject to statutory and regulatory requirements under chap ninety-one and section forty of chapter one hundred and thirty-one or is t site of any project authorized by special act prior to January first, ninetee hundred and seventy-three.

The term "Riverfront area boundary line", as used in this section, shall m the line located at the outside edge of the riverfront area.

SECTION 19. Said section 40 of said chapter 131, as so appearing, is h further amended by inserting after the word "fisheries", in lines 163 and each instance, the following words:- or to the protection of the riverfront consistent with the following purposes: to protect the private or public wa supply; to protect the ground water; to provide flood control; to prevent s damage; to prevent pollution; to protect land containing shellfish; to prot wildlife habitat; and to protect the fisheries.

SECTION 20. The fourteenth paragraph of said section 40 of said chapt 131, as so appearing, is hereby amended by inserting after the sixth sen the following four sentences:- In the case of riverfront areas, no order iss by a conservation commission, board of selectmen, mayor, or the depart shall permit any work unless the applicant, in addition to meeting the otherwise applicable requirements of this section, has proved by a preponderance of the evidence that (1) such work, including proposed mitigation measures, will have no significant adverse impact on the riverf area for the following purposes: to protect the private or public water sup protect the ground water; to provide flood control; to prevent storm dama prevent pollution; to protect land containing shellfish; to protect wildlife h and to protect the fisheries, and (2) there is no practicable and substanti equivalent economic alternative to the proposed project with less advers effects on such purposes. An alternative is practicable and substantially economically equivalent if it is available and capable of being done after into consideration: costs, and whether such costs are reasonable or pro to the owner; existing technology; the proposed use; and logistics in light overall project purposes. For activities associated with access for one d unit, the area under consideration for practicable alternatives will be limit the lot; provided, that said lot shall be on file with the registry of deeds a the August first, nineteen hundred and ninety-six. For other activities incl but not limited to, the creation of a real estate subdivision, the area unde consideration shall be the subdivided lots, any parcel out of which the lot were created, and any other parcels that are adjacent to such parcel or adjacent through other parcels formerly or presently owned by the same owner at any time on or after August first, nineteen hundred and ninety-s any land which can reasonably be obtained; provided, that an ownership interest can reasonably be obtained after taking into consideration: cost, whether such cost is reasonable or prohibitive to the owner; existing

technology; the proposed use; and logistics in light of overall project pur

ATTACHMENT H
Draft EPA Guidance Document on Solid Waste Transfer Stations Siting and Operations

United States Environmental Protection Agency | Solid Waste and Emergency Response (5306W) | EPA530-D-01-001 April 2001

EPA

Waste Transfer Stations:

A Manual for Decision-Making

DRAFT

The Office of Solid Waste (OSW) would like to acknowledge and thank the members of the Solid Waste Association of North America Focus Group and the National Environmental Justice Advisory Council Waste Transfer Station Working Group for reviewing and providing comments on this draft document. We would also like to thank Keith Gordon of Weaver Boos & Gordon, Inc., for providing a technical review and donating several of the photographs included in this document.

This manual defines what a transfer station is and how it relates to municipal solid waste management in the context of a community's total waste management plan. The manual identifies issues and factors to consider when deciding to build a transfer station, planning and designing it, selecting a site, and involving the community.

In many communities, citizens have voiced concerns about solid waste transfer stations that are poorly sited, designed, or operated. In addition, some citizens might feel that transfer stations are disproportionately concentrated in or near their communities. Yet transfer stations play an important role in a community's waste management system.

The intent of this manual is to promote the use of best practices in transfer station siting, design, and operation to maximize facilities' effectiveness and efficiency, while minimizing their impact on the community. The manual is divided into the following chapters:

- Planning and Siting a Transfer Station
- Transfer Station Design and Operations
- Facility Oversight

What Are Waste Transfer Stations?

Waste transfer stations play an important role in a community's total waste management system, serving as the link between a community's solid waste collection program and a final waste disposal facility. While facility ownership, sizes, and services offered vary significantly among transfer stations, they all serve the same basic purpose—consolidating waste from multiple collection vehicles into larger, high-volume transfer vehicles for more economical shipment to distant disposal sites. In its simplest form, a transfer station is a facility with a designated receiving area where waste collection vehicles discharge their loads. The waste is often compacted, then loaded into larger vehicles (usually transfer trailers, but intermodal containers, railcars, and barges are also used) for long-haul shipment to a final disposal site—typically a landfill, waste-to-energy plant, or a composting facility. No long-term storage of waste occurs at a transfer station; waste is quickly consolidated and loaded into a larger vehicle and moved off site, usually in a matter of hours.

For purposes of this manual, facilities serving only as citizen drop-off stations or community convenience centers are not considered waste transfer stations. Only a facility that receives some portion of its waste directly from collection vehicles, then consolidates and reloads the waste onto larger vehicles for delivery to a final disposal facility, is considered a transfer station. A convenience center, on the other hand, is a designated area where residents manually discard waste and recyclables into dumpsters or collection containers. These containers are periodically

Aerial view of a totally enclosed transfer station.

removed or emptied, and the waste is transported to the appropriate disposal site (or possibly to a transfer station first). Convenience centers are not suitable for use as transfer stations because they cannot readily handle the large volume of waste that is discharged by a self-unloading collection truck. Many communities have installed full-service operations that provide public waste and recyclables drop-off accommodations on the same site as their transfer stations.

Source reduction and recycling also play an integral role in a community's total waste management system. These two activities can significantly reduce the weight and volume of waste materials requiring disposal, which reduces transportation, landfill, and incinerator costs. Source reduction consists of reducing waste at the source by changing product design, manufacturing processes, and purchasing and sales practices to reduce the quantity or toxicity of materials before they reach the waste stream. U.S. Environmental Protection Agency (EPA) policy promotes source reduction as the waste management technique of choice.

Recycling—the collection, processing, and manufacture of new products—likewise diverts materials from the landfill or incinerator. These recyclable materials are prepared for shipment to markets in a special facility called a MRF, which stands for materials recovery facility. A MRF is simply a special type of transfer station that separates, processes, and consolidates recyclable materials for shipment to one or more recovery facilities rather than a landfill or other disposal site. Unfortunately, even with aggressive source reduction and recycling programs, communities will still have large volumes of waste that must be managed. Waste transfer stations can help manage this remaining waste more efficiently.

Why Are Waste Transfer Stations Needed?

The nationwide trend in solid waste disposal has been toward construction of larger, more remote, regional landfills. Economic considerations, heavily influenced by regulatory and social forces, are compelling factors leading to this result. The passage of federal criteria in 1991 established new design requirements for municipal solid waste landfills. These new standards include design, operating, and monitoring requirements that significantly add to construction, operating, closure, and post-closure monitoring costs. As older landfills near urban centers reach capacity and begin closing, cities must decide whether to construct new landfills or to seek other disposal options. Many communities find the cost of upgrading existing facilities or constructing new landfills to be prohibitively high, and opt to close existing facilities. For these communities, transferring waste to a large regional landfill is an appealing alternative.

In addition to regulatory requirements, public opposition frequently makes siting new landfills near population centers difficult. The current atmosphere is such that gaining public and political approval for constructing new disposal capacity near population centers is challenging. Also, adequate land is often not available near densely populated or urban areas. These social, political, and geographical factors have further stimulated the rise in construction of large, remote, regional landfills.

Economic considerations, especially economies of scale, further promote development of large regional facilities. To offset the high cost of constructing and maintaining a modern landfill, facility owners construct large facilities that attract high volumes of waste from a greater geographic area. By maintaining a high volume of incoming waste, landfill owners can keep the per-ton tipping fees low, which subsequently attracts more business. Rural and urban communities alike are finding that the most economically viable solution to their waste disposal needs is shipping their waste to these facilities. In these circumstances, a transfer station serves as the critical consolidation link in making cost-effective shipments to these distant facilities.

Why Use Waste Transfer Stations?

The primary reason for using a transfer station is to reduce the cost of transporting waste to disposal facilities. Consolidating smaller loads

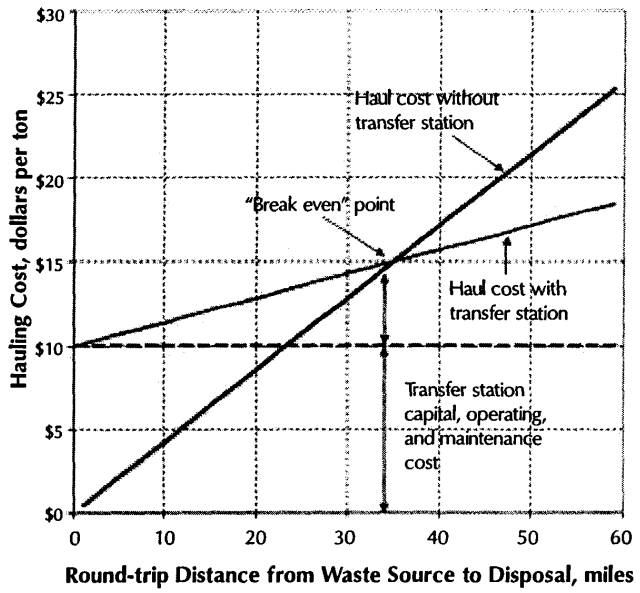
from collection vehicles into larger transfer vehicles reduces hauling costs by enabling collection crews to spend less time traveling to and from distant disposal sites and more time collecting waste. This also reduces fuel consumption and collection vehicle maintenance costs, plus produces less overall traffic, air emissions, and road wear.

A transfer station also provides an opportunity to screen waste prior to disposal. At many transfer stations, workers screen incoming wastes on conveyor systems, tipping floors, or in receiving pits. Waste screening has two components: separating recyclables from the waste stream and identifying any wastes that might be inappropriate for disposal (e.g., white goods, whole tires, auto batteries, or infectious waste). Identifying and removing recyclables reduces the weight and volume of waste sent for final disposal and, depending on local recycling markets, might generate revenue. Screening for inappropriate wastes is more efficient at the transfer station than the landfill.

In addition, waste transfer stations offer more flexibility in terms of disposal options. Decision-makers have the opportunity to select the most cost-effective and/or environmentally protective disposal sites, even if they are more distant. They can consider multiple disposal facilities, secure competitive disposal fees, and choose a desired method of disposal (e.g., landfilling or incineration).

Finally, transfer stations often include convenience centers open to public use. These centers enable individual citizens to deliver waste directly to the transfer station facility for ultimate disposal. Some convenience centers offer programs to manage yard waste, bulky items, household hazardous waste, and recyclables. These multipurpose convenience centers are assets to the community because they assist in achieving recycling goals, increase the public's knowledge of proper materials management, and divert materials that would otherwise burden existing disposal capacity.

Figure 1.
Sample Comparison of Hauling Costs With and Without a Transfer Station



The following assumptions were used to create this sample comparison:

Cost to build, own, and operate transfer station—dollars per ton	$10
Average payload of collection truck hauling directly to landfill—tons	7
Average payload of transfer truck hauling from transfer station to landfill—tons	21
Average trucking cost (direct or transfer hauling)—dollars per mile	$3

The comparison shows a break-even distance of about 35 miles (round-trip). In other words, for this example, using a transfer station is cost-effective when the round-trip distance exceeds 35 miles. When the round-trip distance is less than 35 miles, direct haul is more cost-effective. Although the same economic principles apply, break-even distances will vary in different situations based on the site-specific input data.

Is a Transfer Station Right for Your Community?

Deciding whether a transfer station is appropriate for an individual community is based on determining if the benefits outweigh the costs. Decision-makers need to weigh the planning, siting, designing, and operating costs against the savings the transfer station might generate from reduced hauling costs. To assist in making this determination, public and private decision-makers often employ third-party solid

waste experts. These experts are familiar with both the technical and regulatory issues that must be addressed in developing a successful waste transfer station. It may be helpful to retain qualified consulting or engineering firms specializing in solid waste engineering. It is also important to note that in some areas, the regulatory agency might require that the transfer station plans be certified by a professional engineer. Again, this engineer should be an experienced solid waste professional. Complex projects might also require the assistance of architects, geotechnical engineers, lawyers, and other specialists.

Although cost-effectiveness will vary, transfer stations generally become economically viable when the hauling distance to the disposal facility is greater than 15 to 20 miles. Figure 1 demonstrates a representative "cost versus miles" relationship between direct hauling waste to disposal facilities in collection vehicles versus consolidation, transfer, and hauling in larger vehicles. Using the assumptions listed below Figure 1, we see that the average cost per ton to move the waste from the collection vehicle onto the transfer vehicle is $10 before the hauling vehicle leaves the transfer station. This is the cost per ton to build, operate, and maintain the station. Due to its economy of scale, however, the transfer trailer can move waste on a much lower "per mile" basis because it can carry the waste of several individual collection vehicles.

Using the assumptions listed, the cost per ton per mile (ton-mile) using a collection vehicle is $0.43 ($3/mile truck operating cost divided by 7 tons per average load). In this example, the transfer hauling vehicle's cost per ton-mile is much lower, at $0.14 ($3 divided by 21 tons per average load). Figure 1 shows how this cost per ton-mile advantage for the transfer hauling vehicle soon overcomes the initial cost of developing and operating the transfer station. In this case, based on the indicated assumptions, cost savings will start to be realized when the round-trip hauling distance exceeds 35 miles (17.5 miles one way). Because the cost to own, operate, and maintain collection vehicles, transfer stations, and transfer hauling vehicles will vary depending on local parameters, the break-even point indicated on Figure 1 will vary. The formulas used in generating Figure 1 are provided below to allow for site-specific calculations.

Calculating Transfer Station Break-Even Points

To calculate the break-even point for a specific facility, first determine the following values:

- Transfer Station Unit Cost: cost to build down and operate transfer station (in dollars per ton)
- Direct Haul Payload: average payload of collection truck during direct haul (in tons)
- Transfer Haul Payload: average payload of transfer truck during transfer haul (in tons)
- Trucking Cost: average cost of direct or transfer hauling (in dollars per mile)

Once these values are known, use the following formulas to calculate cost at different distances:

Cost of Direct Haul (without the use of a waste transfer station) = Distance (miles) multiplied by Trucking Cost (dollars per mile) divided by Direct Haul Payload (tons)

Cost of Transfer Haul =
Transfer Station Cost (dollars per ton) plus Distance (miles) multiplied by Trucking Cost (dollars per mile) divided by Transfer Haul Payload (tons)

A variety of issues must be taken into account during the planning and siting stages of transfer station development. This section discusses the types of waste transfer stations typically accept, factors affecting a transfer station's size and capacity, and issues regarding facility siting, including process issues and public involvement. While the planning and siting phases of facility development might involve a significant investment of resources, this initial investment is crucial to ensuring an appropriate project outcome sensitive to the host community.

Types of Waste Accepted

In addition to processing mixed municipal solid waste (MSW), some transfer stations offer programs that manage specific materials separately to divert waste from disposal and to achieve recycling objectives. These materials could include construction and demolition debris, yard waste, household hazardous waste, or recyclables. The types of materials processed often vary depending on where the facility is located (urban, suburban, rural) and who owns and operates the transfer station (public entity or private industry).

Types of waste that transfer stations commonly handle are described in the adjacent box.

If a community offers programs that manage parts of the waste stream separately, it might reduce expenses by locating the material management programs at the transfer station. Savings might result by:

- Using dual-collection vehicles for refuse and source-separated waste streams and delivering all waste to the transfer station in one vehicle.
- Continuing to use separate collections for refuse and source-separated waste streams, but having all processing facilities located at one site, thus minimizing the cost of multiple utility connections, traffic control systems, office space, and administration. This approach also eliminates the cost and complexity of multiple siting and permitting efforts.

Unacceptable Wastes

Certain wastes might be unacceptable at a transfer station for a variety of reasons, including:

- They are prohibited by state or federal regulations (e.g., PCBs, lead acid batteries).

Wastes Commonly Handled at Transfer Stations

[illegible] types of [illegible] commonly handled at transfer stations. [illegible] of these wastes vary locally.

Municipal solid waste (MSW) is generated by households, businesses, institutions, and industry. MSW typically contains a wide variety of materials including discarded containers, packaging, food wastes, and paper products. MSW includes a mixture of putrescible (easily degradable) and nonputrescible (inert) materials. Three types of MSW are commonly diverted and handled separately:

- Yard waste (green waste) commonly includes leaves, grass clippings, [illegible]. Yard waste is often diverted so that it may be composted [illegible] for disposal.
- Household hazardous waste (HHW) includes hazardous materials generated by households, such as cleaning products, pesticides, herbicides, used automotive products such as motor oil, brake fluid, and antifreeze, and paint.
- Recyclables include discarded materials that can be reprocessed for manufacture into new products. Common recyclables include paper, newsprint, ferrous metals, plastic, glass containers, aluminum cans, motor oil, and tires.

Construction and demolition (C&D) debris results from demolition or construction of buildings, roads, and other structures. It typically consists of concrete, brick, wood, masonry, roofing materials, sheetrock, plaster, metals, and tree stumps. Sometimes C&D debris is managed separately from MSW; other times it is mixed with MSW.

- They are difficult or costly to process (e.g., tires).
- They might pose a health or fire hazard.
- They might be prohibited at the disposal facility to which the transfer station delivers.
- They might be prohibited (within a mixed waste load destined for disposal) because local regulations require they be recycled.

The following types of wastes are typically not accepted at transfer stations: large bulky objects such as tree stumps, mattresses, or furniture; infectious medical waste; hazardous waste; explosives; radioactive materials; fuel tanks (even if empty); appliances; dead animals; asbestos; liquids and sludges; and dust-prone materials. This is a general list; some transfer stations might be set up to process these wastes, while others might have a longer list of unacceptable materials. While these and other unacceptable wastes represent a small fraction of the solid waste stream, properly managing them can require significant effort by the transfer station operator and the local solid waste management authority. The section on waste screening in the Transfer Station Design and Operation chapter further discusses how to properly manage and reduce the frequency of unacceptable waste at a transfer station.

Public Versus Commercial Use

Some transfer stations provide public access to the facility rather than restricting access only to waste collection vehicles. The types of customers accommodated vary depending on where the facility is located and who owns and operates the transfer station. Publicly operated transfer stations are more likely to be open to public use. Private transfer stations might not be open to the public because residents deliver relatively small amounts of waste with each visit, require more direction for safe and efficient use of the transfer station, and generally pay relatively small fees for using the transfer station. The general public usually is allowed to use a transfer station for any of several reasons: waste collection is not universally provided in the area; some wastes, such as bulky items or remodeling debris, are not collected; or public access is part of a strategy to prevent illegal dumping by providing a convenient, cost-effective place for people to deposit waste. Public unloading areas and traffic patterns are usually kept separate from commercial vehicles for safety and efficiency.

Determining Transfer Station Size and Capacity

The physical size of a planned transfer station is typically determined based on the following factors:

- The definition of the service area. Sometimes this is relatively simple, such as "all waste generated by Anytown, USA," or "all waste collected by Acme Hauling Company." Other times, the service area is more difficult to define because of varying public and private roles in solid waste management and the changing availability of existing disposal facilities.
- The amount of waste generated within the service area, including projected changes such as population growth and recycling programs.
- The types of vehicles delivering waste (such as car or pickup truck versus a specially designed waste-hauling truck used by a waste collection company).
- The types of materials to be transferred (e.g., compacted versus loose MSW, yard waste, C&D), including seasonal variations.
- Daily and hourly arrival patterns of customers delivering waste. Hourly arrivals tend to cluster in the middle of the day, with typical peaks just before and after lunchtime. Peak hourly arrivals tend to dictate a facility's design more than average daily arrivals.
- The availability of transfer trailers, intermodal containers, barges, or railcars, and how fast these can be loaded.
- Expected increases in tonnage delivered during the life of the facility. For example,

in a region with annual population growth of 3 to 4 percent, a facility anticipating a 20-year operating life would typically be designed for about twice the capacity that it uses in its first year of operation.

- The relationship to other existing and proposed solid waste management facilities such as landfills, recycling facilities, and waste-to-energy facilities.

The same factors are used to determine the size of the following transfer station features:

- Amount of off-street vehicle queuing (waiting) space. At peak times, vehicles must often wait to check in at a facility's "gatehouse" or "scale house." It is important that the queue (line) not block public streets or impede vehicular or pedestrian traffic.
- Number and size of unloading stalls, and corresponding number of transfer trailer loading positions.
- Short-term waste processing and storage areas (for holding waste until it can be reloaded into transfer vehicles).

Present and projected daily, weekly, and annual waste volumes (including seasonal variations) are important in planning facility size to accommodate waste deliveries. The maximum rate at which waste is delivered is a crucial consideration as well. In general, it is best to build a facility to accommodate present and projected maximum volumes and peak flows, with a preplanned footprint for facility expansion. A useful exercise is calculating how much tipping floor space a facility would require to store a full day's waste in case of extreme emergency. One estimate is that 4,000 square feet plus an additional 20 square feet per ton per day tipping floor space would be required to accommodate this need (assuming the waste will be piled 6 feet high on the tipping floor).[1] "Chapter 4: Collection and Transfer" in EPA's *Decision Maker's Guide to Solid Waste Management* also provides a series of formulas for helping determine transfer station capacity (see Table 4-8 on page 4-23).

Number and Sizing of Transfer Stations

Design capacity is determined by the maximum distance from which waste can be economically delivered to the transfer station. The area that can efficiently reach the waste transfer station determines the volume of waste that must be managed, which is the facility's initial design capacity. Beyond a certain distance, another transfer station might be necessary, or it might become just as cost-effective to direct haul to the disposal facility.

Transfer stations serving rural or tribal areas tend to be small. They are optimally located within a reasonable driving time from the service area's largest concentration of homes and businesses. For example, a rural transfer station could be located near one of the service area's larger towns and sized to take waste from all waste generators within about 30 miles. As an example, two 50-ton-per-day transfer stations might each serve six small communities.

Queuing in Urban Areas

In extreme situations where adequate queuing space cannot be provided on the transfer station site, an additional offsite area must be provided as a holding area for waiting trucks. Transfer station staff can watch the waiting truck queue and call trucks in when the station is ready to receive them.

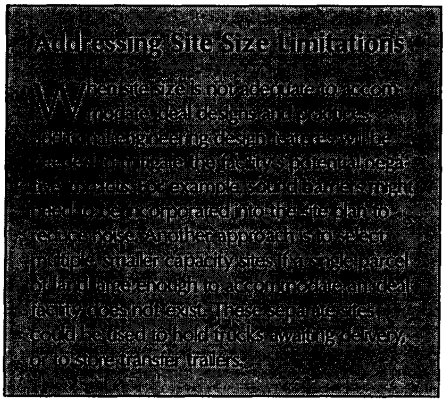
Alternately, fewer transfer stations could be used, necessitating longer average travel distances. For example, one 100-ton-per-day transfer station could be used to serve the same 12 small communities, but it would be located farther from the outlying communities.

In urban or suburban areas, the same situations exists. A midsize city (population 500,000), for example, might decide that two 800-ton-per-day transfer stations would best serve its community. This same city could alternately decide that a single 1,600-ton-per-day transfer station is its best option, even when the longer driving distances are

1 Solid Waste Association of North America. 2001. *Transfer Systems Management Training Course.* SWANA. Washington, DC.

considered. When deciding which approach is best for a community, issues to consider include the impacts the transfer station(s) will have on the surrounding area, siting complications, and the cost to build and operate the transfer station(s). Each approach offers advantages and disadvantages that must be reconciled with local needs.

The biggest advantage of constructing large transfer stations is the economies of scale that can significantly reduce capital and operational costs. Centralizing waste transfer operations allows communities to reduce equipment, construction, waste handling, and transportation costs. The siting of a single facility may often prove easier than siting multiple facilities. Along related lines, however, a major drawback to building a single large facility is locating a tract of land that adequately meets facility requirements. Large facilities also tend to concentrate impacts to a single area, which can create the perception of inequity, especially when one neighborhood is shouldering the burden for the entire city. A single facility can result in longer travel times, which leads to increased down time for the collection crew and increased wear and tear on collection vehicles. Another consideration is that a single facility cannot divert waste to a backup facility if a need arises. The single facility must have additional equipment in case of equipment failure or other emergencies.



In other situations, multiple smaller sites might better address a community's waste management needs. Decentralizing waste transfer operations spreads lesser impacts over a wider area, which helps address equity issues. Although it is generally more expensive to build and operate several small transfer stations rather than one large station with the same total capacity, savings from reduced travel times might offset these capital costs and result in lower overall system costs. Multiple facilities also are better able to serve as backups for one another in case of scheduled or emergency shutdowns of facilities. The major disadvantage to building multiple facilities is that the difficulties encountered in siting a single facility can become multiplied.

Future Expansion

Transfer stations are frequently designed to accommodate future expansion. Often, this is accomplished by siting the facility on a larger parcel of land than would otherwise be necessary and preplanning the site and buildings so expansion can occur without negatively affecting other functions on the site or the surrounding community. Although expansion of effective capacity can sometimes be accomplished simply by expanding the hours of operation, this approach is not always effective because the transfer station must accommodate the collection schedules of vehicles delivering waste to the facility. In addition, increased operating hours might not be compatible with the surrounding community.

Site Selection

Identifying a suitable site for a waste transfer station can be a challenging process. Site suitability depends on numerous technical, environmental, economic, social, and political criteria. When selecting a site, a balance needs to be achieved among the multiple criteria that might have competing objectives. For example, a site large enough to accommodate all required functions and possibly future expansion, might not be centrally located in the area where waste is generated. Likewise, in densely developed urban areas, ideal sites that include effective natural buffers simply might not be available. Less than ideal sites may still present the best option due to transportation, environmental, and economic considerations. Yet another set of issues that must be addressed relates to public concern or opposition, particularly from people living or working near the proposed site. The relative weight given to each criteria used in selecting

a suitable site will vary by the community's needs and concerns. Whether the site is in an urban, suburban, or rural setting will also play a role in final site selection.

The Siting Process and Public Involvement

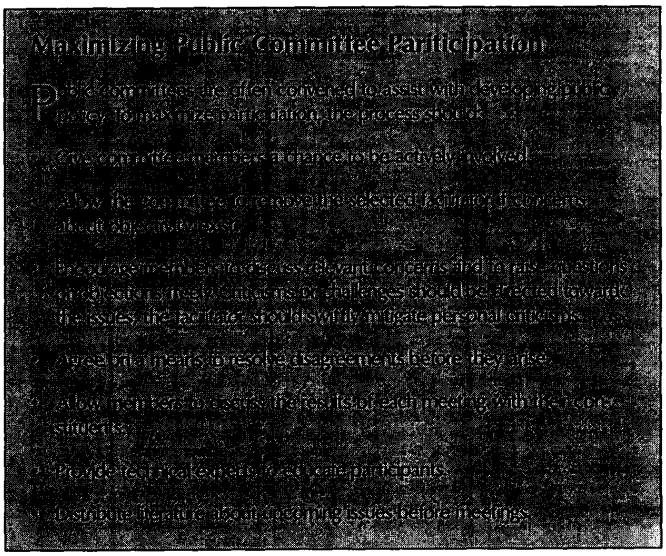
A siting process that includes continuous public participation is integral to developing a transfer station. The public must be a legitimate partner in the facility siting process to integrate community needs and concerns and to influence the decision-making process. Addressing public concerns is also essential to building integrity and instituting good communications with the community. Establishing credibility and trust with the public is as important as addressing environmental, social, and economic concerns about the solid waste facility.[2] A companion document to this manual, *Waste Transfer Stations: Involved Citizens Make the Difference* (EPA530-K-01-003), provides key information citizens require to be effectively involved in the siting and development process. Following are some general guidelines for developing and implementing a siting process that is open to and integrates meaningful public input.

For publicly developed transfer stations, a good first step in the site selection process is establishing a siting committee. The committee's main responsibility includes developing criteria to identify and evaluate potential sites. The committee should consist of key individuals who represent various stakeholder interests. These stakeholders might include:

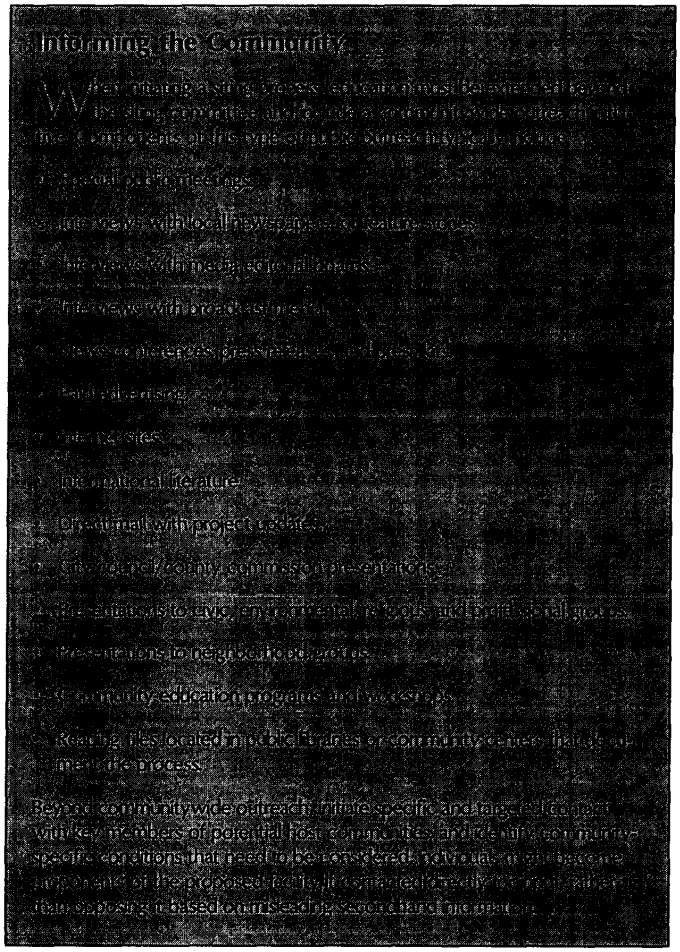
- Community and neighborhood groups.
- Industry and business representatives.
- Civic and public interest groups.
- Environmental organizations.
- Local- and state-elected officials.
- Public officials, such as public works employees and solid waste professionals.
- Academic institutions.

Committee members should be selected to ensure broad geographical representation from across the area to be served by the transfer station. In addition, committee representation should seek gender balance and racial diversity. Volunteer participation should also be solicited.

The committee's meeting times and dates must be planned and scheduled to facilitate attendance by all committee members and other members of the public. Therefore, meeting schedules should avoid conflicts with other major community, cultural, or religious events. To encourage active public participation, meetings should be prominently advertised in the media in a timely manner and be held in facilities accessible to the disabled and located on public transportation routes. Frequently, a facilitator is hired or appointed to keep the meetings focused, to minimize the potential for certain individuals or interest groups to dominate the process, and to encourage active participation by all stakeholders throughout the process.



2 McMaster Institute of Environment and Health, "Psychological Impacts of the Landfill Siting Process in Two Southern Ontario Communities."

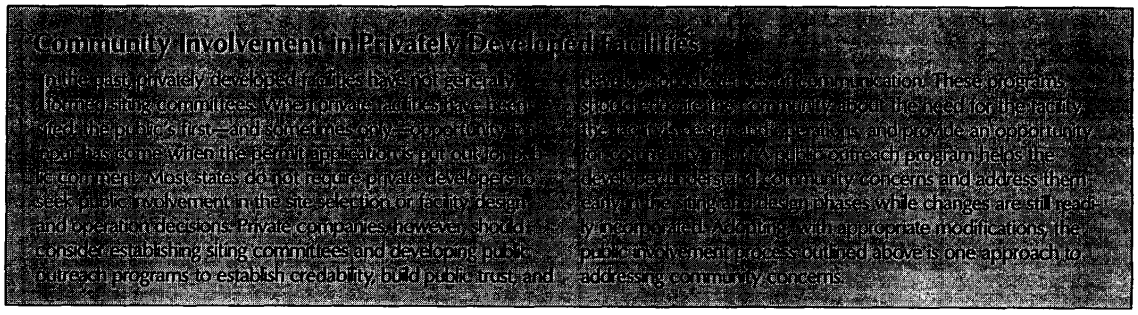


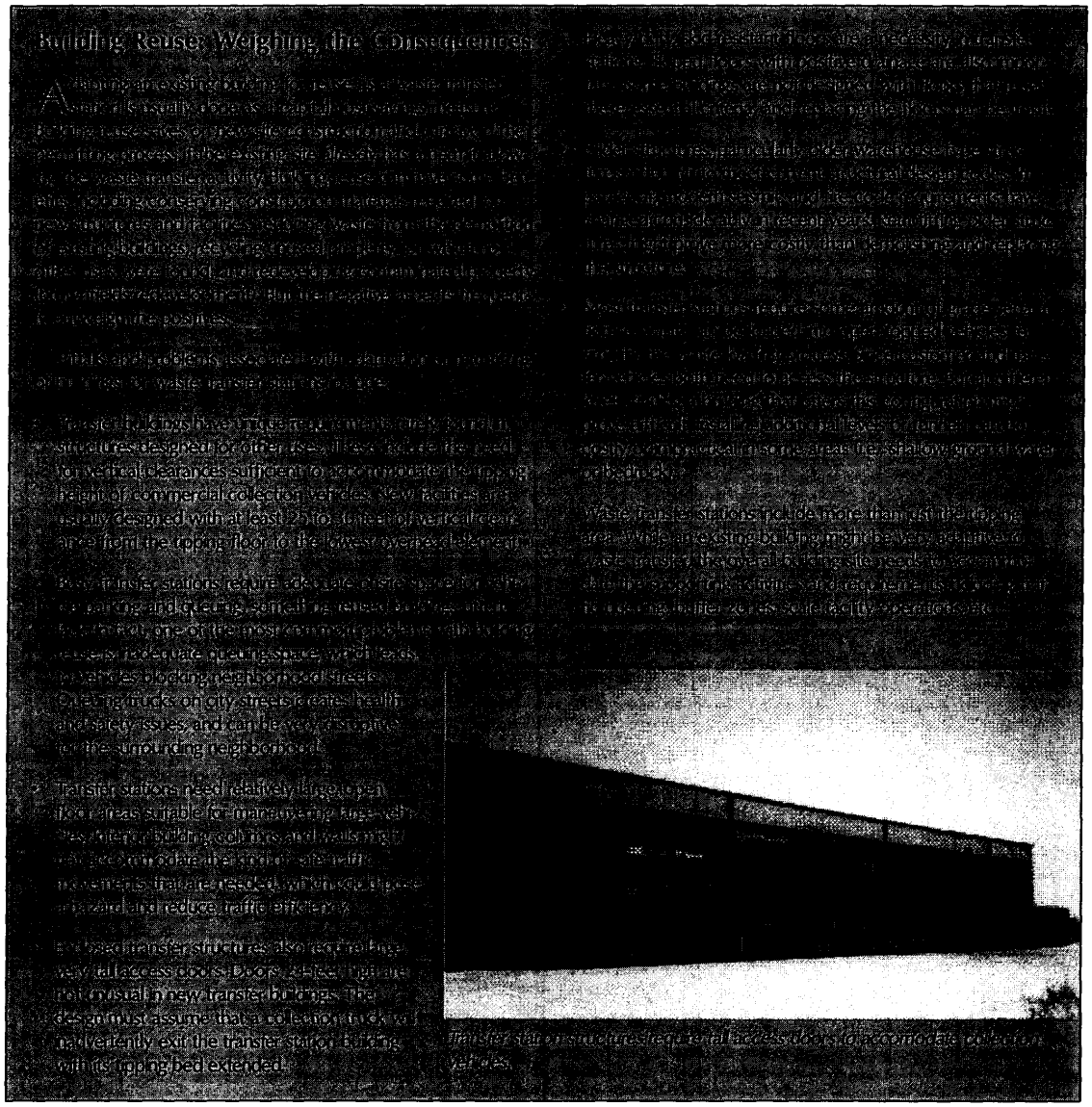
During the siting committee's first meeting, individual duties, group responsibilities, and process issues need to be addressed.

Expectations and limitations of the committee need to be clearly communicated and might be summarized in mission statements. Rules for discourse, and a schedule and procedures for final decision-making, should be determined and agreed upon. Technical experts should be involved early in the process to respond to general questions and to resolve common misconceptions about waste transfer.

After establishing general procedures, committee members should be informed of all details to further ensure equal participation and a means of influencing the decision-making process. Committee members should understand why a transfer station is needed and the facility's role within the solid waste management system. In addition, committee members must be taught the numerous technical, environmental, and economic aspects associated with siting, designing, and operating a transfer station. This ensures that the siting criteria the committee develops will result in identifying potential sites feasible from engineering and operational perspectives, as well as acceptable to the public.

Educational materials for the siting committee should provide useful, objective information. Mistrust of technical information might develop among the committee members and should be anticipated. The credibility of the technical information might be enhanced by encouraging the committee to assist in selecting consultants and technical experts, by encouraging committee members to perform their own research, by using a third party to review technical studies, and by relying on experts who reside within the com-





munity to provide technical information. Information should be relayed in various formats and should consider language barriers, literacy levels, and preferred types of communications. For example, committee education might include presentations by technical experts and tours of existing transfer stations in addition to written materials.

Siting Criteria

Once the committee completes the education phase, criteria should be developed for

identifying and evaluating potential sites. All siting criteria must be developed before identifying potential transfer station sites. This approach ensures siting decisions are based on objective criteria. Three categories or sets of criteria applied during various stages of the siting process are exclusionary, technical, and community- specific criteria. It is important to note that no site may meet all the criteria, in which case, each criterion's relative weight and importance must be considered.

Exclusionary Siting Criteria

Siting a waste transfer station, or any type of facility, in areas with preclusive siting criteria is often prohibited by federal, state, or local laws or regulations, or requires facilities to incorporate special engineering design and construction techniques. Even when siting in excluded zones is allowed, the added engineering designs or strong public opposition can significantly increase construction costs. In general, it is best to avoid siting in these areas. Exclusionary criteria might include areas such as:

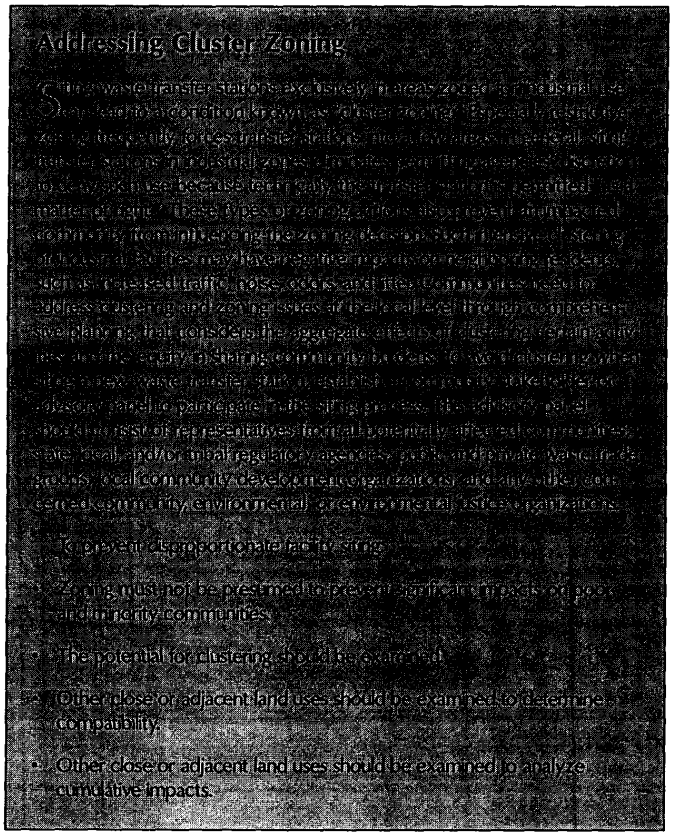
- Wetlands and floodplains.
- Endangered and protected flora and fauna habitats.
- Protected sites of historical, archeological, or cultural significance.
- Prime agricultural land.
- Parks and preserves.

Some examples of federal laws defining these areas include the Endangered Species Act; the Migratory Bird Conservation Act; the Coastal Zone Management Act; the Wild and Scenic Rivers Act; the Marine protection, Research, and Sanctuaries Act; and the National Historic Preservation Act.

Technical Siting Criteria

The second category of criteria to develop includes technical parameters that help define the best potential facility sites. These criteria provide guidance on specific engineering, operation, and transportation conditions that should be considered to ensure that potential sites are feasible from technical, environmental, and economic perspectives. These criteria address the following issues:

- **Central location to collection routes:** To maximize waste collection efficiency, transfer stations should be located centrally to waste collection routes. As a rule of thumb in urban and suburban areas, transfer stations should be no more than 10 miles away from the end of all collection routes. Beyond that distance, collection routes might need to be altered to enable refuse to be collected and deposited at the transfer station within one operating shift.
- **Access to major transportation routes:** The transfer station should have direct and convenient access to truck routes, major



arterials, and highways (or rail or barge access, if appropriate). For large metropolitan areas, direct access to rail lines or barges will significantly reduce the number of large transfer trailers leaving the station and traveling area roads. It is preferable to avoid routing traffic through residential areas because traffic generated by transfer stations contributes to congestion; increased risk to pedestrians; increased air emissions, noise, and wear on roads; and might contribute to litter problems.

- **Site size requirements:** The area required for specific transfer stations varies significantly, depending on the volume of waste to be transferred, rates at which waste will be delivered, the functions to be carried out at the site, and the types of customers the facility is intended to serve. Locating a site of sufficient size is critical to operating efficiencies and minimizing impacts on the surrounding community. Engineering input can establish preliminary size criteria based on a conceptual design.
- **Sufficient space for onsite roadways, queuing, and parking:** Transfer stations typically have onsite roadways to move vehicles around various parts of the transfer site. Waste collection trucks can be up to 40 feet long. Transfer trailers that move waste to a disposal facility are typically 50 to 70 feet long. These vehicles need wide roadways with gradual slopes and curves to maneuver efficiently and safely. Also, the site will need space for parking transfer vehicles and to allow incoming and outgoing traffic to form lines without backing up onto public roads.
- **Truck and traffic compatibility:** Transfer stations often receive surges of traffic when collection vehicles have finished their routes. Transfer station traffic varies locally, but tends to peak twice a day. The first peak is often near the middle of the day or shift, and the second at the end of the day or shift. Therefore, the best sites for transfer stations are located away from areas that have midday traffic peaks and/or school bus and pedestrian traffic.
- **Ability for expansion:** When selecting a site, consider the potential for subsequent increase in the daily tonnage of waste the facility will be required to manage, or added processing capabilities for recycling and diversion. It is frequently less expensive to expand an existing transfer station than to develop a new site due to the ability to use existing operations staff, utility connections, traffic control systems, office space, and buildings.

Requiring Minimum Distance Between Transfer Stations

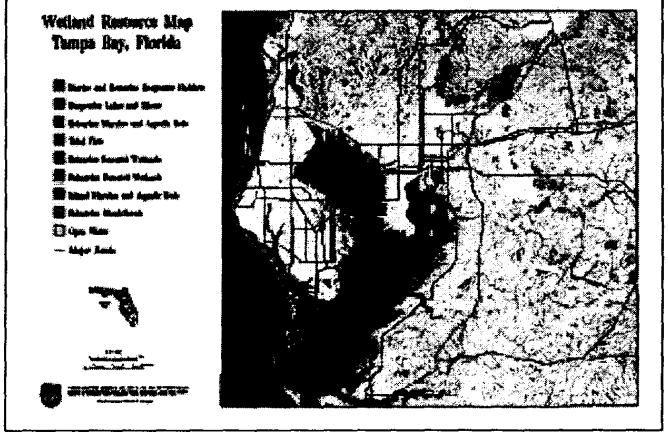
- **Space for recycling, composting, and public education:** A transfer station could be sited in areas also conducive to recycling or composting activities. Many transfer stations are designed to enable residents and businesses to drop off recyclables and yard waste in addition to trash. Some transfer stations incorporate education centers or interpretive trails focusing on waste prevention. These types of facilities offer increased utility to the community.

Many transfer stations are multi-level facilities that allow vehicle access at several levels.

- **Buffer space:** To mitigate impact on the surrounding community, a transfer station should be located in an area that provides separation from sensitive adjoining land uses such as residences. Buffers can be natural or constructed and can take many forms, including open spaces, fences, sound walls, trees, berms, and landscaping.
- **Gently sloping topography:** Transfer stations often are multilevel buildings that need to have vehicle access at several levels. Completely flat sites need ramps or bridges constructed to allow vehicle access to upper levels (or areas excavated to allow access to lower levels). Sites with moderately sloping terrain can use topography to their advantage, allowing access to the upper levels from the higher parts of the natural terrain and access to lower levels from the lower parts. Sites with steep slopes might require extra costs associated with earthmoving and retaining walls.

Using GIS to Narrow the Search

A geographic information system (GIS) is a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information (data identified according to location). Typically, the data are entered for each positive attribute or exclusion criteria. Existing transfer stations can be layered on top of natural maps as well as political maps to narrow down potential site locations. The maps show the variables in a GIS, such as topography, infrastructure, and housing patterns.



- **Access to utilities:** Transfer stations generally require electricity to operate equipment, such as balers and compactors; lighting; water for facility cleaning, restrooms, and drinking; and sanitary sewer systems for waste-water disposal. Some smaller transfer stations use wells for water supply, and some, especially in more rural settings, use septic systems or truck their waste water for offsite treatment.

Zoning Designations and Requirements

Zoning ordinances frequently classify transfer stations as industrial uses, which limits their siting to areas zoned for industry usually in conjunction with a special use permit. Exclusive use of predetermined land use criteria, however, might result in locating transfer stations in areas already overburdened with industries or clustering of these types of facilities in areas adjacent to poor and minority communities. If local zoning ordinances are so restrictive that they disallow facility siting outside pre-established industrial zones, substantial engineering and architectural design must be incorporated into the facility to minimize impacts on the surrounding community.

Developing Community-Specific Criteria

The third category of criteria to consider are impacts that the facility will have on the surrounding community. These criteria are typically less technical in nature and incorporate local, social, and cultural factors. Examples of these criteria include:

- Environmental Justice considerations (e.g., clustering, cumulative impacts).
- Impact on the local infrastructure.
- Adjacent land uses, including other environmental stressors that might already exist.
- Proximity to schools, churches, recreation sites, and residences.
- Prevailing winds.
- Number of residences impacted.
- Presence of natural buffers.

- Impacts on existing businesses.
- Expansion capability.
- Buffer zones and screening measures.
- Traffic compatibility.
- Impact on historic or cultural features.

To maintain objectivity in the facility siting process, the community-specific criteria should be prioritized before potential sites are known. After potential sites are identified, the committee will apply these criteria to evaluate each potential site's suitability as a waste transfer station. These issues also factor into permitting decisions concerning private facilities and should not be ignored by the permitting agency or transfer station developer.

Applying the Committee's Criteria

After all three categories of siting criteria are agreed upon, it is time for the committee to apply the criteria and narrow down all possible sites. Keep in mind, however, that despite the best efforts, every site has some shortcomings that will need to be addressed.

First, the exclusionary criteria can be plotted on maps, which helps the committee visualize where the facility cannot be sited due to local, state, and federal regulations. Once unsuitable areas are eliminated, the committee's technical criteria are applied to all remaining options. Based on the committee's community-specific criteria, information for each potential site should be developed so the committee can rank the sites. Based on the committee's ranking, the top two to four sites should undergo more rigorous analysis to determine technical feasibility and compliance with the environmental and community objectives.

Host Community Agreements

Siting any type of solid waste management facility has often been met with strong community opposition. Whether the facility is publicly or privately owned, many residents may not be confident that the siting, permitting, and oversight process will be sufficiently rigorous to address their concerns and protect them from future impacts. When this type of opposition arises, it is often advantageous for the developer to enter into a separate agreement with the surrounding community, laying out all issues of concern and the developer's action plan in response. These "host community agreements" are most frequently used when private companies are developing a facility, but public agencies might also find them useful in satisfying community concerns. These agreements typically specify design requirements, operating restrictions, oversite provisions, and other services and benefits that the community will receive. Provisions might include the following:

- Limitations on waste generation sources.
- Roadside cleanup of litter on access routes.
- Restrictions on facility operating hours.
- Restrictions on vehicle traffic routes.
- Financial support for regulatory agencies to assist with facility oversight.
- Independent third-party inspection of facilities.
- Assistance with recycling and waste diversion objectives.
- A fee paid to the local government for every ton of waste received at the facility.
- Free or reduced-cost use of the facility for the community's residents and businesses.
- Guaranteed preference to the community's residents for employment.
- Funding for road or utility improvements.
- Provisions for an environmental education center.
- Financial support for other community based activities.

These agreements can also require that community representatives have access to the facility during operating hours to monitor performance. Safety concerns must be addressed if this provision is included. Community representatives usually welcome an ongoing communication process between facility operators and an established citizen's committee to encourage

proactive response to evolving issues. The provisions or amenities in a host community agreement generally are in addition to what state and local standards or regulations require, and thus should not be thought of as substitutes for adequate facility design and operation. The same is true for state, tribal or local government compliance enforcement. The government agency responsible for transfer station compliance also should make a commitment to the community concerning its role in actively and effectively enforcing all requirements.

This section discusses the many factors that affect a transfer station design. The general design issues discussed in this section can typically be applied at a variety of facility sites and over a wide range of facility sizes. Specific design decisions and their costs, however, can only be finalized once a specific site is selected. After determining who will use the facility and how, a site design plan can be developed. A facility's design must accommodate its customers' vehicles and the technology used to consolidate and transfer waste, provide for employee and public safety, and address environmental concerns related to safeguarding health and being a good neighbor to the surrounding community.

Transfer Station Design

How Will the Transfer Station Be Used?

The most important factors to consider when designing a transfer station are:

- Will the transfer station receive waste from the general public or limit access to collection vehicles?
- What types of waste will the transfer station accept?
- What additional functions will be carried out at the transfer station (i.e., material recovery programs, vehicle maintenance)?
- What type of transfer technology will be used?
- How will waste be shipped? Truck, rail, or barge?
- What volume of material will the transfer station manage?
- How much waste will the facility be designed to receive during peak flows?
- How will climate and weather affect facility operations?

Site Design Plan

Once a site is identified for the transfer station, planners, architects, and engineers use the factors described above to develop a site plan for the proposed facility.[2] A site plan shows the layout of the transfer station site's major features, including access points, roadways, buildings, parking lots, utilities, surface-water drainage features, fences, adjacent land uses, and landscaping.

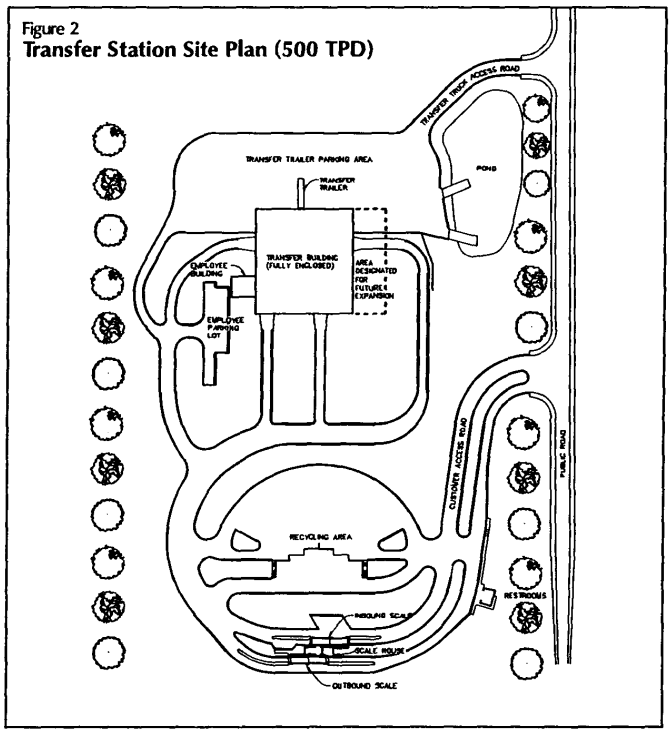
Figure 2 shows a simplified example of a site design plan of a fully enclosed transfer station. This facility has a design capacity of 500 tons per day and occupies a 25-acre site. It serves both the general public and waste collection vehicles and has a citizen drop-off area for recyclables.

Site design plans typically show the following features:

- **Road entrances and exits.** Including acceleration/deceleration lanes on public streets, and access points for waste arriving and departing from the transfer station. Some facilities have separate access for visitors and employees so these vehicles do not have to compete with lines of vehicles using the facility.
- **Traffic flow routes on site.** Often, separate routes are established for public use and for heavy truck use. Designers work to eliminate sharp turns, intersections, and steep ramps.
- **Queuing areas.** Queues can develop at the inbound scales, the tipping area, and the outbound scales. Queuing space should be clearly identified, and queues should not extend across intersections.

2 Sometimes a "conceptual site plan" is developed before a site is identified. This can be helpful in identifying and assessing the size and suitability of candidate sites.

Figure 2
Transfer Station Site Plan (500 TPD)



- **The scale house.** Incoming and outgoing loads are weighed and fees are collected.
- **Primary functions at the transfer station building.** Including tipping floor, tunnels, ramps, etc.
- **Buildings.** Including entrances and exits for vehicles and people.
- **Parking areas.** Employees, visitors, and transfer vehicles.
- **Public conveniences.** Such as separate tipping areas for the general public, recycling dropoff areas, a public education center, and restrooms.
- **Space for future expansion of the main transfer building.** Often, this area is shown as a dotted line adjacent to the initial building location.
- **Buffer areas.** Open space, landscaping, trees, berms, and walls that reduce impacts on the community.
- **Holding area.** For inspecting incoming loads and holding inappropriate waste loads or materials for removal.

Main Transfer Area Design

Most activity at a transfer station occurs within the main transfer building. Here, cars and trucks unload their waste onto the floor, into a pit, or directly into a waiting transfer container or vehicle. Direct loading can simplify operations, but limits the opportunity to perform waste screening or sorting. When not loaded directly, waste deposited onto the floor or into a pit is stored temporarily, then loaded into a transfer trailer, intermodal container, railcar, or barge. Most modern transfer stations have enclosed buildings. Some older and smaller facilities are partly enclosed (e.g., a building with three sides) or only covered (e.g., a building with a roof but no sides). Small rural facilities might be entirely open but surrounded by fences that limit access and contain litter.

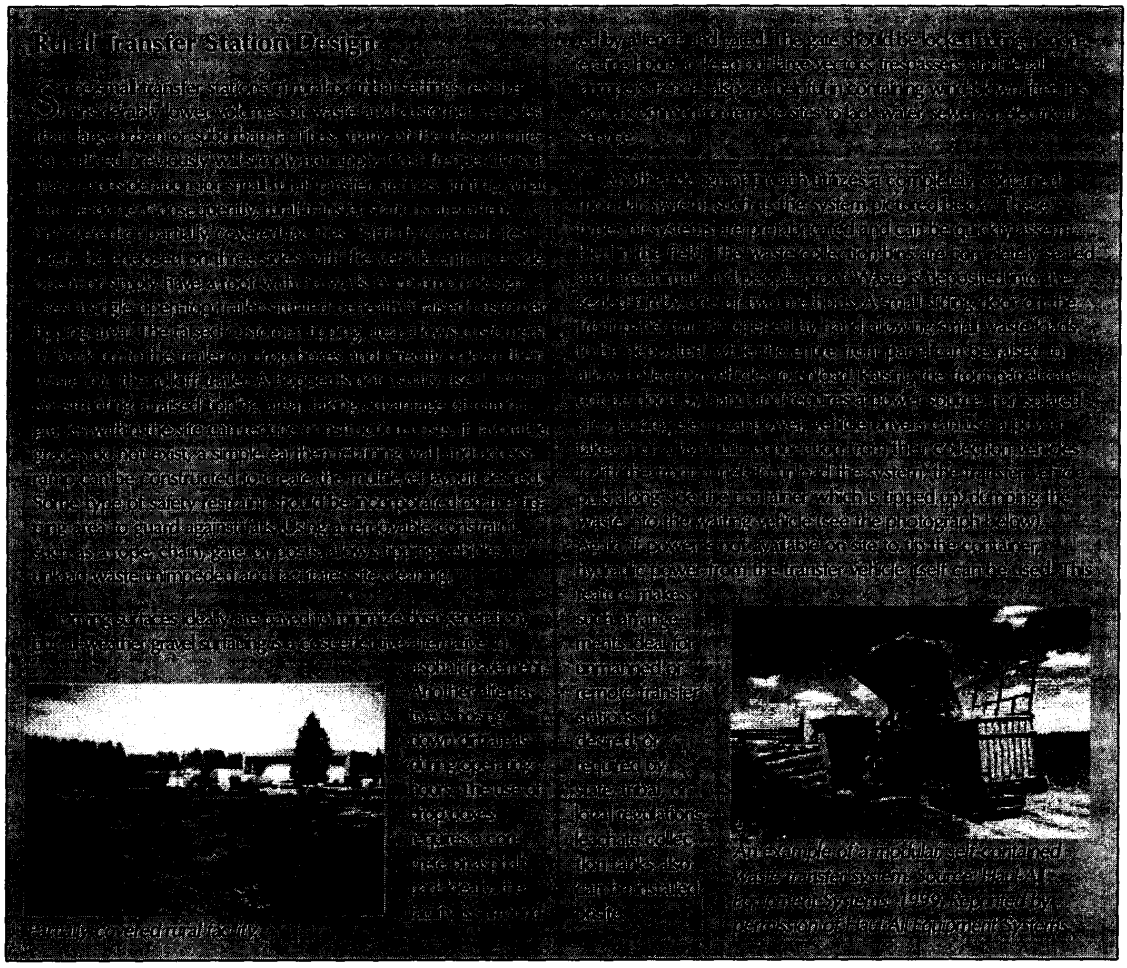
Figure 3 shows the main transfer building for the site plan depicted in Figure 2. It shows a 40,000-square-foot building with a pit, separate tipping areas for public versus large trucks on either side of the pit, and a preload compactor to compact the waste before it is loaded into transfer trailers.

Because the main transfer building is typically quite tall to accommodate several levels of traffic, it can often be seen easily from offsite locations. Therefore, the main transfer building should be designed to blend into or enhance the surrounding neighborhood.

Types of Vehicles That Use a Transfer Station

Traffic is frequently a transfer station's most significant community impact. Because the primary purpose of transfer stations is to provide more efficient movement of wastes, it is important to consider the following types of customers and vehicles that commonly use them.

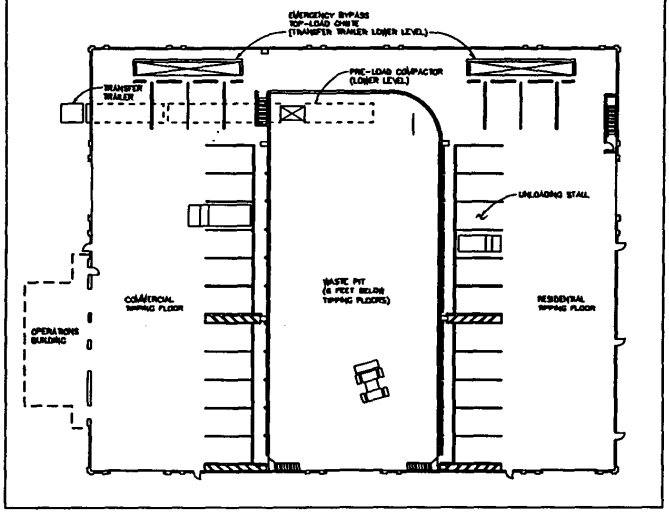
- **Residents hauling their own wastes in cars and pickup trucks.** Residents regularly served by a waste collection service typically visit the transfer station less frequently than residents in unincorporated and rural areas



not served by waste collection companies (or who elect not to subscribe to an available service). Residents typically deliver only a few pounds to a ton of waste per visit.

- **Businesses and industry hauling their own wastes in trucks.** Many small businesses such as remodeling contractors, roofers, and landscapers haul their own wastes to transfer stations. The vehicle type used and the waste amount delivered by businesses varies considerably.
- **Public or private waste hauling operations with packer trucks.** Packer trucks, which compact waste during the collection process, are commonly used on collection routes serving homes and businesses. Packer trucks typically visit many waste generators along their routes and unload when full, generally once or twice per day. Convenient access to a transfer station helps keep packer trucks on their collection routes. Packer trucks typically deliver 5 to 10 tons of waste per visit.
- **Public or private waste hauling operations with rolloff trucks.** Large rolloff containers are typically placed at businesses and

Figure 3
Main Transfer Building Floor Plan



industry and collected when they are full. A rolloff box is a large metal bin, often open at the top, that can be loaded onto a truck and hauled away to dispose of the waste. Rolloff boxes also are commonly used at transfer stations to receive yard waste, recyclables, and solid waste from the general public. A typical, large rolloff box measures 8 feet tall, 7 feet wide, and 22 feet long. Unlike packer trucks that operate on an extended route before traveling to the transfer station, rolloff trucks typically travel to one place, pick up a roll-off container, travel to and unload at the transfer station, and return the empty rolloff container to the place of origin. Because rolloff trucks handle many loads per day, convenient access to a transfer station is very important to their operations. Rolloff trucks typically deliver 2 to 8 tons per visit.

- **Transfer vehicles hauling waste from the transfer station.** Transfer trailers (similar to large interstate tractor-trailers) commonly haul consolidated waste from transfer stations to disposal facilities. Trains or barges are also used to haul waste from some large urban transfer stations (see text box).

Transfer trailers typically haul 15 to 25 tons per trip, while trains and barges typically haul thousands of tons. Some stations transfer materials by using intermodal systems, which combine short distance truck transport with longer distance rail or barge transport.

The following design issues should be considered for the various vehicle types:

- Packer trucks and rolloff trucks require a tall "clear height" inside buildings so they do not hit overhead lights, beams, or doorways when extended. When these vehicles unload, they typically require 25 to 30 feet of vertical clearance. Large transfer stations can more readily accommodate this requirement. Small and medium-sized transfer stations can provide this clearance, but doing so tends to make these buildings unusually tall for their size, particularly if they are multilevel facilities.
- Packer trucks and rolloff trucks need space on the tipping floor to pull forward as the load is deposited if they are unloading on a flat floor (rather than into a pit).
- Packer and rolloff trucks require large areas to turn, back up, and maneuver into the unloading area.
- Residential loads, particularly those pulling trailers, require additional time and space to back up into the unloading area. In the interest of safety and site efficiency, many transfer stations have a separate access road and receiving area for residential deliveries so that they do not tie up unloading space reserved for trucks. Residents typically unload materials by hand, which takes additional time.
- Curves and intersections along roads on or near the transfer station site need large turning radii so the rear wheels of trucks do not run over curbs or off the road when making moderate or sharp turns.
- Slopes on ramps should be limited to less than 8 percent, particularly for fully loaded transfer trailers.

- In colder climates, measures and equipment for seasonal or severe weather should be incorporated. Road sanders and snowplows for ice and snow removal are some examples.

Transfer Technology

The method used to handle waste at the transfer station from the time it is unloaded by collection vehicles until it leaves the site is central to any transfer station's design. In the simplest cases, waste from collection vehicles is unloaded directly into the transfer container or vehicle. As this eliminates opportunities to inspect or sort the material, other floor tipping methods are more common.

This section describes the basic methods of handling waste at transfer stations, explains which methods are most appropriate for small and large transfer stations, and addresses the advantages and disadvantages of each method. Figure 4 shows simple diagrams of the various transfer methods described in this manual.

Options for unloading waste from collection or residential vehicles at the transfer station include:

- Directly unloading material into the top of a container or transfer trailer parked below the unloading vehicle, or onto a tipping floor at the same level as the unloading vehicle (Figure 4-A).
- Unloading into a surge pit located below the level of the unloading vehicle (Figure 4-B).

A collection vehicle dumps its load onto the tipping floor.

Waste can be moved and piled for short-term storage on the tipping floor or in a pit. Short-term storage allows waste to be received at the transfer station at a higher rate than it leaves the facility, increasing a transfer station's ability to handle peak waste delivery periods.

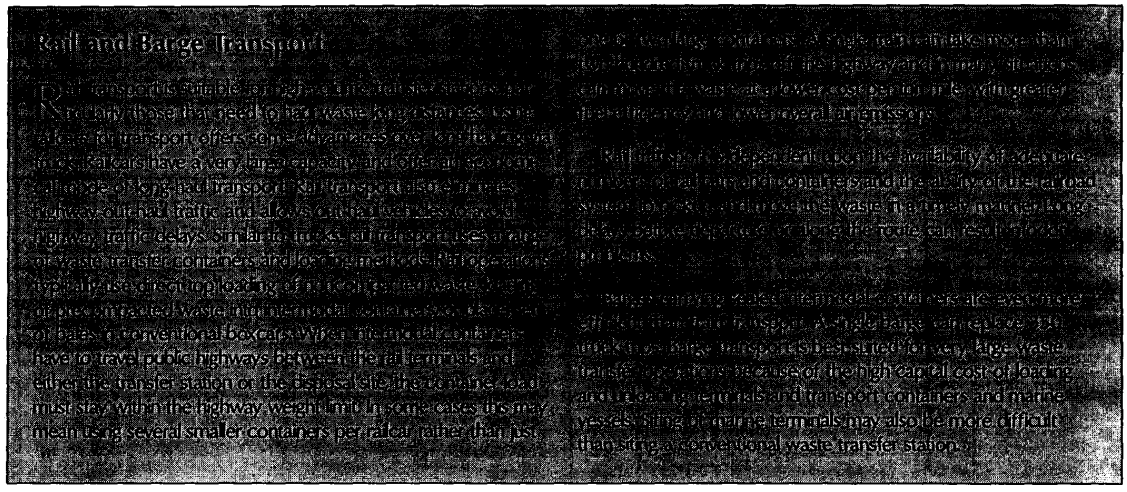
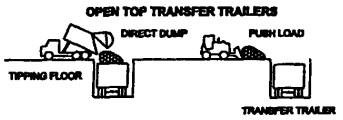


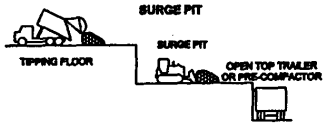
Figure 4
Basic Transfer Station Technologies

Waste can be unloaded directly into the "open top" of the trailer, but is most often unloaded on the tipping floor to allow for materials recovery and waste inspection before being pushed into the trailer. Large trailers, usually 100 cubic yards or more, are necessary to get a good payload because the waste is not compacted. This is a simple technology that does not rely on sophisticated equipment (e.g., compactor or baler). Its flexibility makes it the preferred option for low-volume operations.

A.



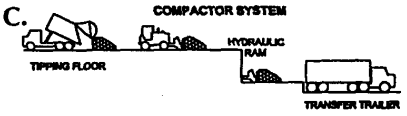
B.



The surge pit is not a loading technology, but an intermediate step normally used with open-top or precompactor systems. The pit can store peak waste flow, thus reducing the number of transfer trailers needed. A tracked loader or bulldozer is used to compact the waste before loading, increasing payload. Because waste is often unloaded directly into the surge pit, this technology might deter materials recovery and waste screening efforts.

Stationary compactors use a hydraulic ram to compact waste into the transfer trailer. Because the trailer must be designed to resist the compactive force, it is usually made of reinforced steel. The heavy trailer and the weight of the onboard unloading ram reduce the payload available for waste. This technology is declining in popularity.

C.

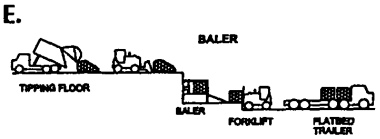


D.

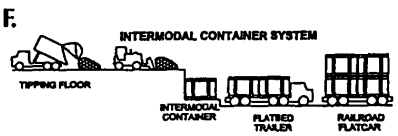
Precompactor systems use a hydraulic ram inside a cylinder to create a dense "log" of waste. The log is pushed into a trailer that uses "walking floor" technology to unload or relies on a tipper at the landfill to unload by gravity. Most precompactor installations have two units in case one unit requires repair. The capital cost is relatively high at more than $250,000 per unit, but the superior payload can offset these initial costs.

Balers are units that compress waste into dense, self-contained bales. Wire straps may be used to hold the bales intact. They are usually moved by forklifts and transported by flatbed trailers. The baler units can also be used for recyclables such as paper and metal. Payloads are very high, but so are capital costs. Most baling stations have at least two units in case one is down, and they cost more than $500,000 apiece. This high-technology option is normally used only in high-volume operations, and special equipment or accommodations might be required at the landfill (or balefill).

E.



F.



In this alternative, waste is tipped at a transfer station, then loaded into intermodal containers. These containers typically have moisture- and odor-control features and are designed to fit on both flatbed trailers and railroad flatcars. The containers may be loaded directly onto railcars or transferred by truck to a train terminal. The sealed containers can be stored on site for more than 24 hours until enough containers are filled to permit economic transport to the landfill. At the landfill, these containers are usually unloaded by tippers. This option allows for reduction of total truck traffic on local roads and can make distant disposal sites economically viable.

Source: DuPage County. 1998. *Solid Waste Transfer in Illinois: A Citizen's Handbook on Planning, Siting and Technology.* Reprinted by permission of DuPage County.

Options for reloading waste into a transfer container or vehicle include:

- Reloading directly from a tipping floor or pit into top-load containers or transfer trailers parked below the tipping floor or pit (Figures 4-A and 4-B).
- Reloading into a compactor that packs the waste into the end of a container or transfer trailer (Figure 4-C).
- Reloading into a preload compactor that compacts a truckload of material and then ejects the compacted "log" into the end of a container or transfer trailer (Figure 4-D).
- Reloading into a baler, which makes bales that can then be forklifted onto a flatbed truck (Figure 4-E).

Options for unloading waste at the disposal facility from transfer containers or vehicles include push-out blades, walking floors, and trailer tippers. With push-out blades and walking floors, the trailers unload themselves. A trailer tipper lifts one end of the trailer (or rotates the entire trailer) so that the load falls out due to gravity. Baled waste can be manipulated at the landfill using forklifts.

Table 1 summarizes the advantages and disadvantages of the various transfer technologies. Some transfer stations use a combination of technologies to mitigate some of the disadvantages of a particular design. For example, large transfer stations might have a top-loading system as a backup in case the preload compactor breaks down or in case of an electric power outage. It also illustrates that many interrelated factors need to be considered when deciding on the appropriate technology for a transfer station. The major factors include design capacity, distance to the disposal site, cost, reliability, safety, and method of unloading at the disposal site.

Transfer Station Operations

This section describes transfer station operations issues and suggests operational practices intended to minimize the facility's impact on its host community. Issues covered include:

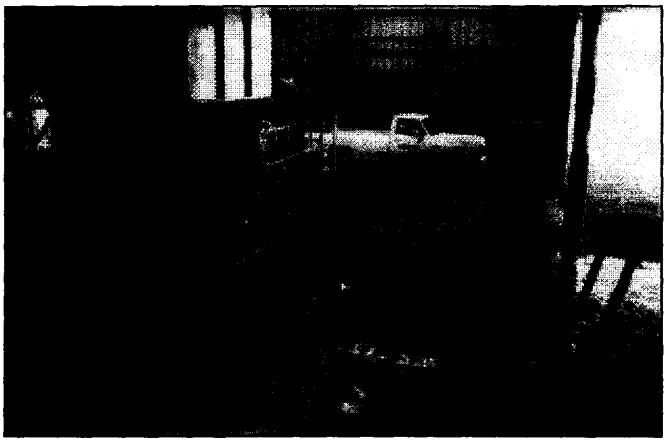
- Operations and maintenance plans.
- Facility operating hours.
- Interacting with the public.
- Waste screening.
- Emergency situations.
- Recordkeeping.

A trailer tipper emptying a transfer trailer at a waste disposal facility.

Operations and Maintenance Plans

Although a transfer station's basic function as a waste consolidation and transfer facility is straightforward, operating a successful station involves properly executing many different tasks. Some tasks are routine and easily understood, while others occur infrequently and might be difficult to conduct properly without step-by-step directions. To help ensure proper operations, transfer stations should have written operations and maintenance plans. These plans are often required by state, tribal, or local regulations. They should be written specifically for a particular facility and include the following elements:

- Facility operating schedule, including days of the week, hours each day, and holidays.



Solid waste baler compacts waste into dense, self-contained bales.

Table 1

Advantages and Disadvantages of Different Transfer Technologies

Waste Storage Alternatives			
Technology	**Advantages**	**Disadvantages**	**Application**
Direct dump into transfer vehicle or storage container	Simple arrangement; little potential for equipment breakdown. Low capital cost. Potentially less housekeeping: no tipping floor, pit, or compaction equipment to clean and maintain. Much smaller building footprint possible, but advantage might be decreased by need for large yard space for queuing.	Transfer station cannot accept waste unless a trailer is positioned to receive waste. (Shortage of empty trailers shuts down facility.) No short-term storage (surge capacity) to accommodate peak inflow periods. Unless many unloading stalls are provided, long customer queuing can be expected during peak inflow periods. Relatively low payloads in trailers. Fall hazard. Limited ability to screen and remove unacceptable wastes. No opportunity for waste diversion or materials recovery. Generally not suitable for receiving loads from large roll-offs or large packer trucks. Trailers can be damaged by direct dumping of heavy materials.	Most suitable for small transfer stations in rural and tribal settings with a relatively short haul distance to the waste disposal site. Frequently used in conjunction with bins for source-separated recyclables.
Tipping floor waste storage	Simple arrangement; little potential for equipment breakdown. Generally less expensive and provides more operational flexibility than pits. Storage provides "disconnect" between waste receipts and waste loading. (Shortage of empty trailers does not shut down facility.) Allows for easy screening and removal of unacceptable wastes.	Garbage on tipping floor can be messy and slippery (fall hazard). Potential for accidents between customers and transfer station mobile equipment (e.g., wheel loader) that moves/stacks waste (safety issue). Requires roll-out space for trucks to pull forward when discharging their loads. Equipment is needed to reload the waste into the transfer trailer.	Suitable for small and large transfer stations; can manage nearly all waste types.

	Allows for the breaking up of bulky items and the compacting of waste to increase density for more economical shipping.		
Surge pit	Storage provides "disconnect" between waste receipts and waste loading. (Shortage of empty trailers does not shut down facility.) Allows for the breaking up of bulky items and the compacting of waste to increase density for more economical shipping. No roll-out space required for unloading vehicles; waste falls from back of truck into pit. Eliminates potential for collision between transfer station equipment and customers.	Expensive to construct. Fall hazard for people and vehicles. Can be difficult to remove unacceptable waste found in the pit. Extra building level (three stories instead of two) might increase overall height of building above grade, increasing building profile. Equipment is needed to reload the waste into the transfer trailer.	Most suitable for large transfer stations with high peak flows.
Transfer Container and Vehicle Loading Alternatives			
Technology	**Advantages**	**Disadvantages**	**Application**
Top-loading trailers and containers	Simple, gravity-loaded method. Might be supplemented with compaction by using equipment that reaches into the top of the trailer to tamp down and level the load. Suitable for a wide range of waste types, including construction debris and bulky materials.	Generally involves imperfect, permeable closure (screen or tarp) on top of trailer. Odors and litter can escape, and precipitation can make the load heavier. Trailers can be damaged when dense or sharp materials fall into an empty trailer. Sound of waste falling into trailers can be noisy.	Suitable for small and large transfer stations.
Compaction into trailer and container	A trailer or container can be completely closed to prevent rainwater entry and odor and liquid from escaping. Compaction usually achieves high densities.	A heavy trailer or container decreases effective payload. (Trailer must be structurally reinforced to withstand the pressure of the compactor.) Capital cost of trailer fleet is greater. Tail end of trailer or container (near compactor) tends to become overloaded. Front end of trailer tends to be light. Rear axle loading tends to limit effective payload. Hydraulic power equipment for compactor can be noisy.	Not commonly used for new transfer stations.

Transfer Container and Vehicle Loading Alternatives (cont.)

Technology	Advantages	Disadvantages	Application
Preload compaction into rear-loading trailer or container	Allows use of lightweight trailer or container to increase effective payload. Trailer or container can be completely closed to prevent rainwater entry and odor and liquid from escaping. Payload can be measured as it is compacted, with ability to optimize each payload.	High capital costs (but can be offset by reduced transportation costs). Relatively complex equipment; when it breaks down, can shut down transfer station after short-term storage capacity is full. Redundancy (i.e., two compactor units) increases costs. Totally dependent on availability of electrical power. Large motor sizes generally preclude the use of a standby electrical generator to handle power outage. Less suitable for certain types of waste (oversize materials, concrete, wire, cable). Hydraulic power equipment for compactor can be noisy. A heavy electrical power consumption system.	Most suitable for high-volume transfer stations, particularly those that need to haul waste long distances. Container alternative ideally suited for intermodal transfer to rail system.
Baling	Allows for efficient transportation due to density of waste and ability to use light-weight trailers. Trailer can be completely closed to prevent rainwater entry, and odor and liquid from escaping. Compatible with balefills, which can landfill a large amount of waste in a small space; might be best in difficult (extreme weather or windy) environments. Baler can also be used to prepare recyclables for transport and sale.	High capital cost. Relatively complex equipment; when it breaks down, it can shut down transfer station after short-term storage capacity is full. Hydraulic power equipment for baler can be noisy. Special equipment needed at landfill.	Suitable for large transfer stations, particularly those that need to haul waste long distances. Required for delivering waste to a balefill.

Transfer Container and Vehicle Unloading Alternatives

Technology	Advantages	Disadvantages	Application
Push-out blade transfer trailer	Allows for unloading anywhere (not just at a landfill with a trailer tipper).	Some trailer capacity (both volume and weight) used for the push-out blade, which reduces effective waste payload. Material can become stuck behind push-out blade. Blade can bind during extension or retraction.	Most suitable for short-distance, low-volume hauling.
Walking floor transfer trailer	Allows for unloading anywhere (not just at a landfill with a trailer tipper).	More prone to leak liquids from the bottom of the trailer. More prone to damage from dense or sharp objects that fall into an empty trailer.	Suitable for a range of volumes and distances.
Trailer tipper for transfers trailers and trailer-mounted containers	Allows use of lightweight trailers to maximize payloads. Ideal for rail-based container intermodal system.	High reliability or redundancy required—no way to unload trailers at the landfill if the tipper fails. Tippers can be unstable if placed over waste at landfill.	Most suitable for long-distance, high-volume hauls. Most suitable for hauls to large landfills (small to medium landfills not likely to have a tipper).
Open-top railcar tippers	Extremely rapid, large-volume unloading.	Fixed unloading point requires reloading and some other form of transport from unloading point to final destination.	Most suitable for a fixed-disposal method such as at a solid waste incinerator.

- Staffing plan that lists duties by job title, minimum staffing levels, and typical work schedules.
- Description of acceptable and unacceptable wastes, and procedures for diverting restricted waste before and after unloading.
- Operating methods for each component of the facility, including waste-screening methods, truck-weighing procedures, tipping floor operations, transfer vehicle loading, onsite and offsite litter cleanup, and wastewater collection system operations.
- Description of maintenance procedures for each component, including the building, mobile equipment, utilities, and landscaping.
- Employee training.
- Safety rules and regulations.
- Recordkeeping procedures.
- Contingency plans in the event of transfer vehicle or equipment failure, or if the disposal site is unavailable.
- Emergency procedures.

Facility Operating Hours

A transfer station's operating hours must accommodate the collection schedules of vehicles delivering waste to the facility. Operating hours need to consider the local setting of the transfer station, including neighboring land uses, as well as the operating hours of the disposal facility receiving waste from the transfer station.

Operating hours vary considerably depending on individual circumstances. Many large facilities located in urban industrial zones operate 24 hours, 7 days per week. Urban, suburban, and rural transfer stations of various sizes commonly open early in the morning (6 a.m. to 7 a.m.) and close in the late afternoon (4 p.m. to 5 p.m.). In many cases, the last trailer must be loaded with sufficient time to reach the disposal site before it closes (typically 4 p.m to 6 p.m.).

Transfer stations that serve both the general public and waste hauling companies typically operate 6 or 7 days per week. Facilities that are not open to the public typically operate 5 or 6 days per week because many waste hauling companies do not operate on Sundays and have limited operations on Saturdays. Many smaller and rural facilities operate only on certain days of the week and have limited hours.

The hours described above represent when the transfer station is open to receive waste from customers. Operations often extend beyond the "open for customers" hours, however, as workers load waste into transfer vehicles, clean the facility, and perform equipment maintenance. Depending on the nature of the operation, transfer trucks leaving the site can sometimes operate on a schedule somewhat independent of the rest of the operations. For example, some operations maintain an inventory of empty transfer containers and vehicles and loaded containers and vehicles at the transfer station site. Loaded containers and vehicles can be hauled off site according to the best schedule considering traffic on area roadways, neighborhood impacts of truck traffic, and the hours the disposal facility receives waste from the transfer station. State, tribal, or local regulations might limit the overnight storage of waste in the transfer station or even in transfer trailers.

Interacting With the Public

Every transfer station has neighbors, whether they are industrial, commercial, residential, or merely vacant land. The term "neighbor" should be broadly interpreted, as some of those impacted might not be immediately adjacent to the transfer station. For example, vehicles traveling to and from a transfer station could significantly affect a residential neighborhood a mile away if those vehicles travel on residential streets.

An important part of successful transfer station operations is engaging in constructive dialogue with the surrounding community. The appropriate level of interaction between transfer station personnel or representatives and their neighbors varies depending on many factors. A transfer station in the middle of a warehouse district with direct access to

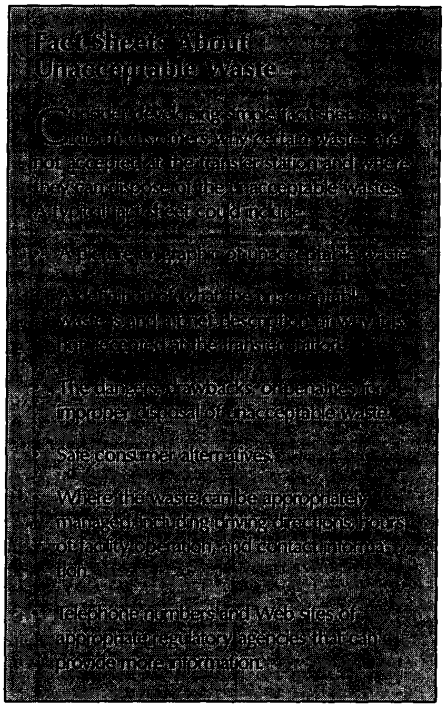
expressways might find that joining the local business association and routinely picking up offsite litter are adequate community activities. While a transfer station located adjacent to homes and restaurants might find that monthly meetings with neighbors, landscaping improvements, commitments to employ local workers, an odor reporting hotline, and daily cleanup of litter are more appropriate.

When developing a community outreach plan, transfer station operators should consider the following:

- Develop a clear explanation of the need for the transfer station and the benefits it will provide to the immediate community and surrounding area.
- Develop a clear process for addressing community concerns that is communicated to the neighborhood even before the facility becomes operational.
- Designate one person as the official contact for neighborhood questions and concerns. Ideally, this person would regularly work at the transfer station and be available to respond quickly to questions and concerns. The person should also be good at listening carefully to community concerns before responding. Advertising an e-mail address or Web site is another way to provide information and allow community input.
- Organize periodic facility tours. Neighbors unfamiliar with the transfer station's operations are more likely to have misconceptions or misunderstand the facility's role.
- Establish positive relationships by working with community-based organizations, improvement districts, civic associations, business associations, youth employment bureaus, and other organizations. Interaction with the community should focus on positive issues, not just occasions when a neighbor is upset about odor, litter, or traffic.
- Offer support services such as newspaper drives, household hazardous waste (HHW) drop-off days, and spring cleaning disposal at the facility.

Waste Screening

As described in the section on Unacceptable Wastes in the Planning and Siting a Transfer Station chapter, some types of wastes are not appropriate for handling at a transfer station. These unacceptable wastes might be difficult to handle, dangerous, prohibited at the disposal facility where the waste is sent, or subject to a recycling mandate.[3] Transfer station operators should screen for unacceptable materials before, during, and after customers unload, and should tell customers where they can dispose of wastes inappropriate for that transfer station.

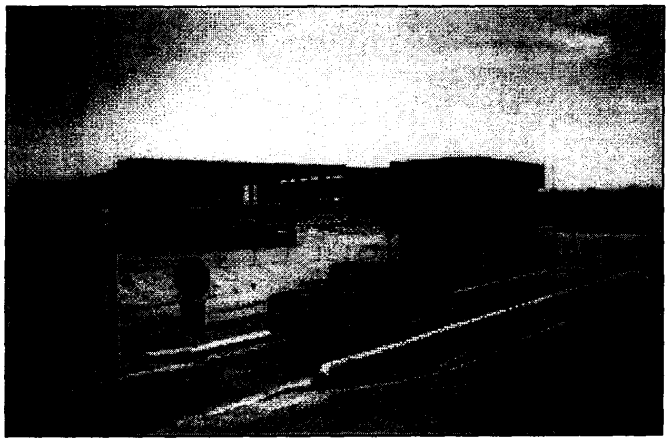


If their wastes are refused at a transfer station, some customers might illegally dispose of unacceptable materials or might try to hide these materials in a future delivery. When customers arrive with unacceptable materials, operators could give them a preprinted fact sheet that describes the issue and suggests alternative management methods. In addition, community programs dedicated to reducing the use of products that generate dangerous wastes can decrease unacceptable waste deliveries to transfer stations.

At the transfer station, screening for unacceptable wastes could start at the scale house (where customers first check in upon arrival at the facility). Employee training on identifying

3 For example, some states, tribes, or cities prohibit the disposal of yard wastes in landfills. Thus, grass clippings would be prohibited in a mixed waste load.

and managing suspect materials is the cornerstone in any waste-screening program. Operators could interview customers about types of waste they have and from where the waste was collected. A list of common unacceptable items could be posted, and operators could ask if any of the items are present in the load. Visual inspections can also help identify unacceptable wastes. Some facilities provide overhead cameras or walkways to facilitate a view of the top of uncovered loads (or loads that can easily be uncovered at the scale house). Walking around the truck to examine its contents and checking for smoke or suspicious odors might be appropriate.



A transfer station scale house.

Some unacceptable wastes might not become apparent until the unloading process. Operators should observe waste unloading and examine suspected unacceptable wastes. Waste unloaded onto the floor or into a pit is easier to monitor than waste unloaded directly into a transfer container or vehicle. Ideally, unacceptable wastes would be noticed before the delivery vehicle has left the site.

Regardless of screening efforts, transfer station operators should expect that some unacceptable wastes will be discovered after the responsible party is gone. Transfer stations should set aside an area for safe temporary storage of unacceptable wastes until appropriate disposal is feasible, and develop a step-by-step plan to follow. In some cases, the party that deposited the waste can be contacted to retrieve it. In other cases, the transfer station operator must properly manage the waste. Proper material management depends on the type of waste discovered. For example, management of hazardous wastes requires compliance with federal regulations issued under authority of the Resource Conservation and Recovery Act (RCRA) (40 CFR Parts 260 to 299) or the Toxic Substances Control Act (TSCA) (40 CFR Part 700 to 799), whereas recyclable materials screened from the waste stream can be collected and processed with similar materials.

Emergency Situations

Most days at a transfer station involve routine operations. Transfer station operators should prepare for emergencies, however, and include emergency procedures in their written operations plans. State regulatory agencies often require submission of a Plan of Operations and a Contingency Plan for review and approval. At minimum, the following emergency events should be anticipated:

- **Power failure.** The plan should address how to record customer information, collect fees, and load transfer trailers during a power outage. Many larger transfer stations have backup power generators so at least some operations can continue during a power failure.
- **Unavailability of transfer vehicles.** The plan should address what to do if poor weather, road closures, or strikes prevent empty transfer vehicles from arriving at the transfer station. The plan should also address when the transfer station should stop accepting waste deliveries if the waste cannot be hauled out in a timely manner.
- **Unavailability of scales.** The plan should describe recordkeeping and fee assessment in the event that scales are inoperable. At facilities with both inbound and outbound scales, one scale can temporarily serve both purposes.

- **Fire.** Fire response and containment procedures should address fires found in incoming loads, temporary storage at the transfer station, compaction equipment, transfer vehicles, and other locations. Typically, fire procedures focus on protecting human health and calling professional fire departments.
- **Spill containment.** Spills can occur from waste materials or from vehicles delivering waste. For example, hydraulic compaction system hoses on garbage trucks can break. Spill containment plans should address spill identification, location of spills, deployment of absorbent materials, and cleanup procedures. For large spills, the plan should also address preventing the spill from entering storm drains or sewers.
- **Discovery of hazardous materials.** Hazardous materials plans should include methods to identify and isolate hazardous materials, temporary storage locations and methods, and emergency phone numbers.
- **Injuries to employees or customers.** The plan should include first aid procedures, emergency phone numbers, and routes to nearby hospitals.
- **Robbery.** Some scale houses handle cash and include security provisions to deter robbery.

Emergency plans should include a list of emergency contacts, including daytime and evening phone numbers for facility management, facility staff, emergency response teams, frequent customers, and regulatory agencies.

Recordkeeping

Detailed operating records enable both facility managers and regulatory overseers to ensure that the transfer station is operating efficiently and in accordance with its permit requirements. Medium and large transfer stations typically record the following information as part of their routine operations:

Depositing incoming waste on a tipping floor facilitates waste screening.

- **Incoming loads:** date, time, company, driver name, weight (loaded), weight (empty),[4] origin of load, fee charged.
- **Outgoing loads** (typically transfer trucks): date, time, company, driver name, weight (loaded), weight (empty), type of material (e.g., waste, compostables, recyclables), destination of load.
- **Facility operating log:** noting any unusual events during the operating day.
- **Complaint log:** noting the date, time, complaining party, nature of the complaint, and followup activity to address the complaint.
- **Accidents or releases:** details any accidents or waste releases into the environment.
- **Testing results:** such as tests for suspected unacceptable waste.
- **Environmental test results:** such as surface water discharges, sewer discharges, air emissions, ground-water, or noise tests.
- **Maintenance records:** for mobile and fixed equipment.
- **Employee health and safety reports.**
- **Employee training and operator certification documentation.**

4 For repeat customers, the empty truck (tare) weight is often kept on file so trucks do not need to weigh out during each visit.

Some transfer station operators, particularly at smaller facilities, find it necessary to record only some of the above items. In order to avoid the cost of installing and operating a scale, some small and medium-size transfer stations substitute estimated load volume (as measured in cubic yards) instead of weighing loads (in tons). When loads cannot be easily viewed (such as with packer trucks), cubic yards are generally based on the vehicle's capacity. Loads in cars and pickup trucks are typically charged a minimal flat fee.

Environmental Issues

Developing transfer stations that minimize environmental impacts involves careful planning, designing, and operation. This section focuses on neighborhood quality or public nuisance issues and offers "good neighbor practices" to improve the public's perception of the transfer station. Design and operational issues regarding traffic, noise, odors, air emissions, water quality, vectors, and litter are discussed below. Proper facility siting, design, and operation can address and mitigate these potential impacts on the surrounding natural environment and the community.

Careful attention to these issues begins with the initial planning and siting of a facility and should continue with regular monitoring after operations begin. Transfer station design must account for environmental issues regardless of surrounding land use and zoning. Stations sited in industrial or manufacturing zones are subject to the same environmental concerns and issues as stations located in more populated zones. Minimizing the potentially negative aspects associated with these facilities requires thoughtful design choices. Identifying and addressing these important issues can be a significant part of the overall cost to develop the waste transfer station.

Traffic

Traffic causes the most significant offsite environmental impacts associated with larger waste transfer stations. This is particularly true for stations in urban and suburban areas where traffic congestion is often already a significant problem for the local community. Although transportation routes serving rural stations typically receive less traffic, these routes might still be affected by limitations on gross vehicle weight or individual axle weights for certain roads or bridges.

By consolidating shipments to the disposal site, a waste transfer system will have net positive impacts in terms of reducing community-wide truck traffic, air emissions, noise, and highway wear. Some of these negative impacts, however, might be concentrated in the immediate vicinity of the transfer station as a result of increased local traffic generated by a transfer station, even though overall impacts are reduced.

Evaluating travel routes and the resulting traffic impacts should receive significant attention during facility siting and design to minimize the traffic's offsite environmental impacts. Furthermore, dependable access and smooth traffic flow are essential for good customer service and the operating efficiency of the facility. It is common, particularly in urban and suburban areas, for tribes and other local jurisdictions to require significant offsite improvements to mitigate traffic impacts or to assess traffic impact fees to offset improvements needed for traffic upgrades.

Typically, transfer stations can indirectly control when traffic arrives at the facility by adjusting operating hours. Relatively few transfer stations are able to schedule inbound traffic because collection vehicles need to unload when they are full so collection crews can resume their routes or end their working day. Also, many transfer stations are not operated by the same company delivering waste to the facility, so control over specific timing is difficult. Some transfer stations have the ability to schedule transfer vehicle traffic, however. These stations often schedule trips to avoid rush-hour traffic on area routes.

Any queuing should occur on the transfer station site so as not to inhibit the traffic flow on public streets. Queuing on streets creates public safety concerns, blocks traffic and access to adjacent properties, and in some cases, causes damage to streets not designed

for heavy vehicles. If space on the site is insufficient, alternatives should be considered. These could include providing a separate tipping area for certain types of customers (such as self-haulers, who generate a lot of traffic, but not much waste) or establishing a remote holding lot for inbound vehicles to use before joining the onsite queue. Regulatory agencies sometimes can address and control queuing problems through the permitting process. Permitting agencies can incorporate provisions that require transfer stations to provide adequate queuing space on site or off site or that prohibit queuing on public streets.

As a result of community input, the operator might designate traffic routes to the facility. A simple "right turn only" at the exit can relieve some traffic conflicts. If offsite routes are designated, clear authority for enforcement needs to be established (e.g., by local police or by the station operator refusing access to violators).

Some specific design and operation features that might be necessary to reduce the environmental impacts of station traffic are described below:

- Designating haul routes to and from the transfer station that avoid congested areas, residential areas, and other sensitive areas.
- Adding offsite directional signs, pavement markings, and intersection signals.
- Providing acceleration and deceleration lanes that allow vehicles to enter and leave the flow of offsite traffic smoothly, reducing congestion and the likelihood of accidents.
- Using right turns to enter and leave the station site and minimizing left turns to reduce congestion and the likelihood of accidents off site.
- Providing adequate onsite queuing space so lines of customers and transfer vehicles waiting to enter the facility do not interfere with offsite traffic.
- Installing and using compaction equipment to maximize the amount of waste hauled in each transfer trailer, thus reducing the number of loads leaving the site.
- Establishing operating hours, including restrictions, that encourage facility use during nonpeak traffic times on area roads.
- Schedule commercial waste deliveries to avoid rush-hour traffic.
- Providing or requiring the provision of residential waste collection service to reduce the number of people hauling their own wastes to the transfer station. Although the transfer station will handle the same amount of waste, more of it will arrive as combined collection vehicle loads, reducing the number of loads brought in by cars and pickup trucks. (One residential collection vehicle can haul as much as 15 to 30 cars and pickup trucks.)

Noise Abatement: Leon County, Florida

As part of its site selection process for a waste transfer station, Leon County, Florida, commissioned a study to evaluate and address noise concerns. Parcels adjacent to the site [illegible] residential, commercial, and light industrial. To the west is [illegible] land. The study used a 5-step procedure to determine the impact that noise from the transfer station would have on the adjoining community. It also assessed the effectiveness and feasibility of abatement. The study resulted in [illegible] recommendations relating to building orientation, truck routing, operating hours, berm and wall construction, and vegetative plantings to buffer noise. (Leon County, FL, February 2000)

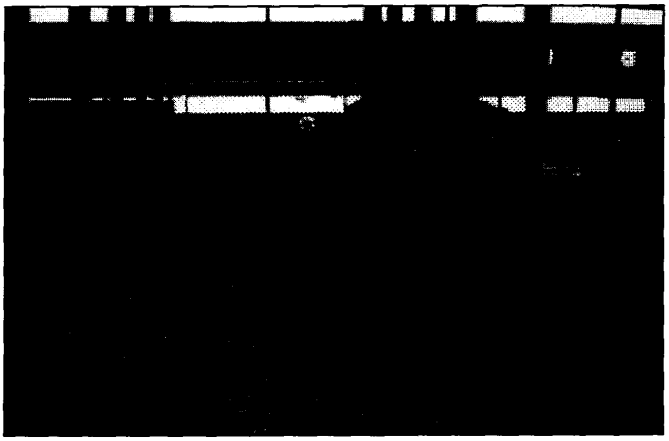
Noise

Transfer stations can be a significant source of noise, which might be a nuisance to neighbors.[5] Heavy truck traffic and the operation of heavy-duty facility equipment are the primary sources of noise from a transfer station. Offsite traffic noise in the station's vicinity will be perceived as noise from the station itself. Equipment noise includes engines, backup alarms (beepers), hydraulic power units, and equipment buckets and blades banging and scraping on concrete and steel surfaces. The unloading of waste or recyclables (particularly glass) onto a

5 Although repeated exposure to high noise levels can lead to hearing impairment, noise levels associated with impairment are typically a concern only to employees; neighborhood impacts are typically a nuisance issue, not a health issue.

tipping floor, pit, steel drop box, or trailer can also create substantial noise, depending on the type of waste, fall distance, and surface. Stations that use stationary solid waste compactors or engine-driven tamping equipment have additional sources of mechanical equipment noise with which to contend. Good facility design and operations can help reduce noise emanating from the station. This includes:

- Maximizing the utility of perimeter site buffers, particularly along site boundaries with sensitive adjoining properties. Increasing the distance between the noise source and the receiver, or providing natural or man-made barriers are the most effective ways of reducing noise when the sound generation level cannot be reduced.
- Orienting buildings so the site topography and the structure's walls buffer adjacent noise-sensitive properties from direct exposure to noise sources.
- Providing sound-absorbent materials on building walls and ceilings.
- Shutting off idling equipment and queuing trucks.
- Avoiding traffic flows adjacent to noise-sensitive property.



Surge pit separating public and commercial vehicles. Water sprays along the walls of the pit are used to suppress dust.

- Arranging the facility layout to eliminate steep uphill grades for waste-hauling trucks, as driving uphill can significantly increase noise levels.
- Facing building openings such as entrances away from noise-sensitive adjoining property.
- Considering alternatives for beeping back-up alarms, such as strobe lights and proximity detectors.
- Confining noisy activities within specified buildings or other enclosures. In particular, enclose hydraulic power units associated with compactors and rams in areas with acoustic silencing materials. Quieter equipment options can also be selected during design.
- Properly maintaining mufflers and engine enclosures on mobile equipment operating within the transfer station. Also insist that operators of commercial hauling vehicles keep their equipment, including the muffler systems, in good repair.
- Keeping as many doors closed during station operating hours as practical.
- Conducting activities that generate the loudest noise during selected hours, such as the morning or afternoon commute hours, when adjoining properties are unoccupied or when offsite background noise is at its highest.

Odors

MSW, food waste, and certain yard wastes such as grass have a high potential for odor generation. Odors might increase during warm or wet weather. Thus, transfer stations handling these wastes need to address odor management based on current and projected adjacent land uses. Odors can be managed with proper facility design and operating procedures, including:

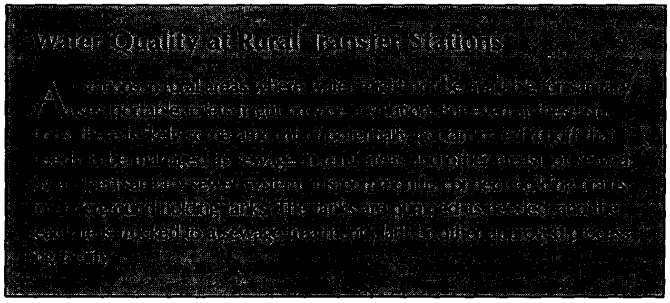
- As with noise mitigation, increasing the distance between the odor source and the receiver effectively reduces the impact of odors.

- Evaluating the prevailing wind direction to determine building orientation and setback to adjacent properties.
- Carefully orienting the building and its doorways with respect to odor-sensitive neighboring property and closing as many doors as practical during operating hours.
- Designing floors for easy cleanup, including a concrete surface with a positive slope to drainage systems. Eliminating crevices, corners, and flat surfaces, which are hard to keep clean and where waste residue can accumulate.
- Sealing concrete and other semiporous surfaces to prevent absorption of odor-producing residues.
- Minimizing onsite waste storage, both in the facility and in the loaded trailers, by immediately loading odorous or potentially odorous wastes into transfer trailers and quickly transferring them to the disposal site.
- Incorporating odor neutralizing systems.
- Removing all waste from the tipping floor or pit at the end of each operating day, then cleaning those areas to remove remaining residues.
- Using enclosed trailers whenever possible when loaded trailers must sit on site temporarily before transfer.
- Practicing "first-in, first-out" waste handling practices so wastes are not allowed to sit on site for long periods of time.
- Collecting and removing partially full containers at rural stations where accumulation of full loads could take several days.
- Keeping building catch basins, floor drains and drainage systems clean so odor-causing residues do not build up.
- Treating drainage systems periodically with odor-neutralizing and bacteria-inhibiting solutions.
- Diverting odorous waste loads to facilities with less sensitive surroundings during adverse weather conditions.
- Refusing to accept certain highly odorous wastes.
- Practicing other "good housekeeping" measures, including regularly cleaning and disinfecting containers, equipment, and other surfaces that come into contact with waste.

Air Emissions

Air emissions at transfer stations result from dusty wastes delivered to the transfer station, exhaust (particularly diesel) from mobile equipment such as trucks and loaders, driving on unpaved or dusty surfaces, and cleanup operations such as street sweeping. As with odor control, proper design and operating procedures help minimize air emissions, including:

- Paving all traffic carrying surfaces.
- Keeping paved surfaces and tipping floors clean, and ensuring any street sweeping operations use sufficient water to avoid stirring up dust.
- Restricting vehicles from using residential streets.
- Selecting alternative fuel or low-emission equipment or retrofitting equipment with oxidation catalysts and particulate traps.
- Installing misting systems to suppress dust inside the building or using a hose to spray dusty wastes as they are unloaded and moved to the receiving vehicles. (In rural areas, small stations might not have a readily available water supply, or might have to rely on a portable water supply for housekeeping needs.)
- Maintaining engines in proper operating condition by performing routine tune-ups.
- Considering the purchase of newer generation, low-emission diesel engines.
- Minimizing idling of equipment by turning off engines when not in use.
- Cleaning truck bodies and tires to reduce tracking of dirt onto streets.



- Maintaining building air filtering systems so that they perform effectively.

Storm Water Quality

Rainfall and wash-down water flows from roofs, roads, parking lots, and landscaped areas at a transfer station, eventually reaching natural or constructed storm water drainage systems. Runoff might also percolate into the ground-water system. Keeping surface water free of runoff contamination from waste, mud, and fuel and oil that drips from vehicles is important to maintaining the quality of both the surface and ground water systems. The quality and amount of runoff often is regulated by state, tribal, or local water management authorities. Transfer station development typically results in the addition of new impervious surfaces (i.e., paved surfaces) that increase the total quantity of runoff and can contribute to flooding potential.

When runoff contacts waste, it is considered potentially contaminated and is known as "leachate." Transfer station design and operation should ensure that contaminated water is collected separately, then properly managed on site or discharged to the sewer. Most transfer stations send some amount of waste water to sewer systems. In addition to leachate, waste water from daily cleaning of the waste handling areas and the facility's restrooms and support areas typically are discharged to the sewer. Local waste water treatment plants establish guidelines for pretreatment and analysis with which transfer stations must comply when discharging waste water into the sewer. To minimize impacts on sewer systems, transfer stations should consider:

- Covering waste handling and storage areas that drain to the sanitary sewer system. This reduces the amount of rainfall contributing to the total volume of sewer flow.
- Removing as much debris from the tipping floor as possible by mechanical means (e.g., scraping or sweeping) before hosing the floor down.
- Installing low-flow toilets, showers, and faucets.
- Providing appropriate pretreatment of water that comes into contact with waste (leachate). Pretreatment requirements vary depending on the capabilities of the receiving sewer, but could include provisions allowing solids to settle out of the sewage, the use of oil/water separators, or the use of other treatment systems.

Other design and operation measures to consider in managing surface water quality include:

- Complying with all surface water management regulations applicable in the jurisdiction where the station is located. In jurisdictions with well-developed regulations, design and operation measures usually include development of surface water detention facilities (ponds, tanks, or large holding pipes) that limit the runoff rate to the predeveloped rate. In addition, water quality requirements might involve desilting facilities and applying various forms of biofiltration to remove contaminants. Some jurisdictions might require pH adjustment and other forms of pretreatment.
- Locating stations outside local flood zones.
- Minimizing impervious areas and maximizing landscape and vegetative cover areas to reduce total runoff.
- Limiting outside parking of loaded containers or alternatively using rain-tight, leak-tight containers. If loaded containers or transfer vehicles are parked or stored outside, providing catch basins connected to the sanitary sewer system might be necessary.

- Maintaining all surface water management facilities in good operating condition. This includes periodic cleaning and removal of silt and debris from drainage structures and ponds, as well as removing collected oil from oil-water separators.
- Responding promptly to exterior spills to prevent waste materials from entering the surface water system.
- Cleaning up liquid spills such as oils, paints, and pesticides with absorbent material rather than hosing them into drains. Although transfer stations generally do not accept these liquids, they might find their way into the waste stream in small quantities.
- Using secondary containment around temporary storage areas for HHW, batteries, and suspect materials.

Vectors

Vectors are organisms that have the potential to transmit disease. Vectors of concern at transfer stations can include rodents, insects, and scavenging birds. Seagulls are particularly troublesome birds in coastal zones and certain inland areas. Much of the concern surrounding vectors is associated with general nuisance factors, but this issue justifies diligent attention. A few basic design elements and operational practices can greatly reduce the presence of vectors, including:

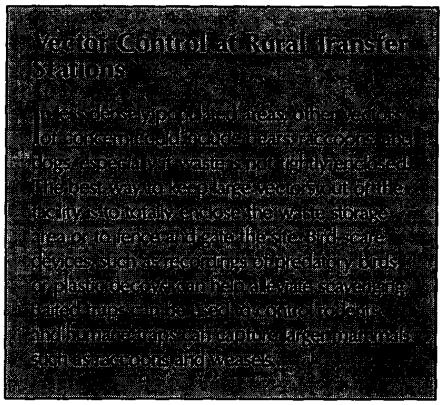
- Eliminating or screening cracks or openings in and around building foundations, waste containers, and holding areas at enclosed-type stations. This reduces opportunities for entry by terrestrial vectors (especially rodents).
- Installing bird-deterrent measures, such as suspended or hanging wires to keep birds out of structures, and eliminating horizontal surfaces where birds can congregate.
- Removing all waste delivered to the facility by the end of each day.
- Cleaning the tipping floor daily.
- Routinely inspecting the facility for potential vector habitat, and taking corrective action when needed.
- Using commercial vector control specialists as necessary.

Litter

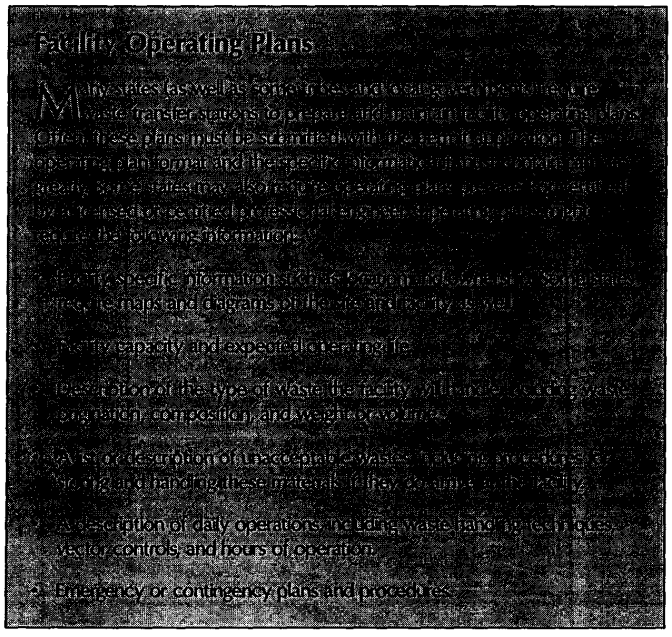
In the normal course of facility operations, stray pieces of waste are likely to become litter in and around the facility. In jurisdictions that do not have or do not enforce regulations to cover customer vehicles, the litter problem is often most prevalent on routes leading to the station. Dry, light materials such as plastic grocery bags can be blown from the backs or tops of vehicles, or from the tipping area to the facility's outside areas.

Design and operation considerations that can reduce the litter problem include:

- Conducting all waste handling and processing activities in enclosed areas, if possible.
- Orienting the main transfer building with respect to the predominant wind direction so it is less likely to blow through the building (or tunnel) and carry litter out. Generally the "blank" side of the building should face into the prevailing wind.
- Strictly enforcing the load covering or tarping requirements will reduce litter from waste trucks. Some transfer station operators have the authority to decline uncovered loads and have instituted surcharges to provide incentives for customers to cover their loads.
- Providing windbreaks to deflect wind away from waste handling areas.
- Locating doors in areas that are less likely to have potentially litter-producing materials stored near them, regardless of building orientation.



- At small rural stations, providing containers with lifting lids that are normally closed.
- Minimizing horizontal ledges where litter can accumulate.
- Providing skirts (usually wide rubber belting or strip brushes) that close the gap between the bottom of the chute and the top of the receiving container at stations that employ chutes and hoppers to contain waste as it is deposited in trailers and drop boxes.
- Installing fencing and netting systems to keep blowing litter from escaping the station site. This is particularly necessary at small rural facilities that are likely open-sided or that lack an enclosing building.
- Conducting routine litter patrols to collect trash on site, around the perimeter, on immediately adjacent properties, and on approach roads and the hauling route(s). Litter patrols, especially at unattended sites, can also detect any illegal dumping that has occurred along the site perimeter.
- Cleaning the tipping floor regularly and maintaining good housekeeping practices. This will minimize the amount of loose material that can be blown outside.



Safety Issues

Thoughtful facility design coupled with good operating practices help ensure transfer stations are safe places. Transfer stations should be designed and operated for the safety of employees, customers, and even persons illegally trespassing when the facility is closed. Designers need to consider that people might trespass on facility grounds during operating hours or after the facility is closed for the night. Most state regulations require security and access control measures such as fences and gates that can be closed and locked after hours. Signs should be posted around the perimeter, with warnings about potential risks due to falls and contact with waste. Signs should be posted in multiple languages in jurisdictions with high percentages of non-English-speaking residents.

Federal Occupational Safety and Health Administration (OSHA) regulations require facilities to provide safe working conditions for all employees. Although regulations specific to waste transfer stations do not currently exist, general OSHA regulations apply as they would to any other constructed facility. State, tribal, and local workplace safety regulations, which can be more stringent than federal regulations, also might apply.

Some state, tribal, or local governments might require a facility's development permit to directly address employee and customer safety. State and tribal solid waste regulations, for instance, often require development of operating plans and contingency plans to address basic health and safety issues. Transfer station safety issues are the facility operator's responsibility.

This section describes general safety concerns associated with solid waste transfer stations. A facility must take steps to eliminate or

reduce risk of injury from many sources, including:

Ergonomics

Improper body position, repetitive motion, and repeated or continuous exertion of force contribute to injuries. Both employers and employees should receive ergonomics training to reduce the likelihood of injury. Such training provides guidance on minimizing repetitive motions and heavy lifting and using proper body positions to perform tasks. At this time there are no federal ergonomic standards. A few states, however, do have such standards under their job safety and health programs. The Occupational Safety and Health Administration's Web site <www.osha-slc.gov/fso/osp/> includes a list of states with such programs and provides links to a number of these states' Web sites.

Exposure to Potentially Hazardous Equipment

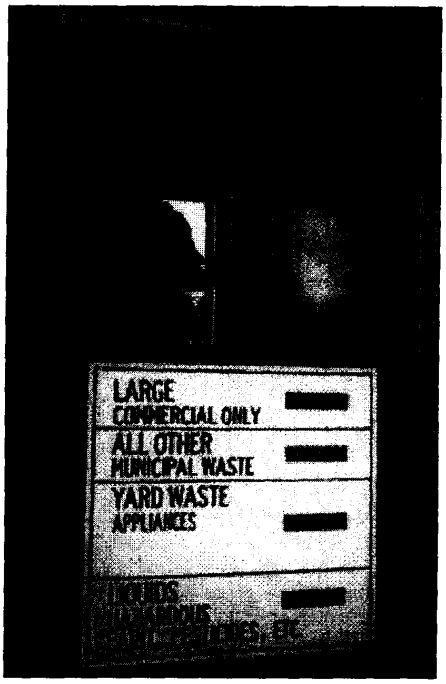
Transfer station employees work in close proximity to a variety of hazards, including equipment with moving parts, such as conveyor belts, push blades, balers, and compactors. Facility operators should develop an employee equipment orientation program and establish safety programs to minimize the risk of injury from station equipment. Lock-out/tag-out programs, for example, effectively minimize hazards associated with transfer station equipment. Staffing the tipping floor with a "spotter," who directs traffic into and out of unloading stalls can effectively help members of the general public avoid dangerous locations. Transfer station operators might also require that children and pets remain inside vehicles. Posting signs and applying brightly colored paint or tape to hazards can alert customers to potential dangers.

Exposure to Extreme Temperatures

Facilities located in areas of extreme weather must account for potential impacts to employees from prolonged exposure to heat or cold. Heat exhaustion and heat stroke are addressed with proper facility operations, including good ventilation inside buildings, access to water and shade, and periodic work breaks. Cold weather is addressed by proper clothing, protection from wind and precipitation, and access to warming areas. Extreme temperatures typically should not pose problems for customers because their exposure times are much less than those of facility workers.

Traffic

Controlled, safe traffic flows in and around the facility are critical to ensuring employee and customer safety. Ideally, a transfer station is designed so traffic from large waste-collecting vehicles is kept separate from self-haulers, who typically use cars and pickup trucks. Facility designers should consider:



Well marked traffic routes can help minimize contact between commercial and public vehicles.

- Directing traffic flow in a one-way loop through the main transfer building and around the entire site. Facilities with one-way traffic flow have buildings (and sometimes entire sites) with separate entrances and exits. The transfer trailers, in particular, are difficult to maneuver and require gentle slopes and sufficient turning radii. Ideally, these trailers should not have to back up.
- Arranging buildings and roads on the site to eliminate or minimize intersections, the need to back up vehicles, and sharp turns.
- Providing space for vehicles to queue when the incoming traffic flow is greater than the facility's tipping area can accommodate. Sufficient queuing areas should be located after the scale house and before the tipping area. This is in addition to and separate

from any queuing area required before the scale house to prevent traffic from backing up onto public roads.

- Providing easily understood and highly visible signs, pavement markings, and directions from transfer station staff to indicate proper traffic flow.
- Providing bright lighting, both artificial and natural, inside buildings. Using light-colored interior finishes that are easy to keep clean is also very helpful. When entering a building on a bright day, drivers' eyes need time to adjust to the building's darker interior. This adjustment period can be dangerous. Good interior lighting and light-colored surfaces can reduce the contrast and shorten adjustment time.
- Providing an area for self-haulers to unload separately from large trucks. Typically, self-haulers must manually unload the back of a pickup truck, car, or trailer. This process takes longer than the automated dumping of commercial waste collection vehicles and potentially exposes the driver to other traffic. It is often a good idea to provide staff to assist the public with safe unloading practices.
- Requiring facility staff to wear bright or conspicuous clothing.
- Installing backup alarms or cameras and monitors on all moving facility equipment, and training all vehicle operators in proper equipment operations safety.

Falls

Accidental falls are another concern for facility employees and customers, especially in facilities with pits or direct dump designs where the drop at the edge of the tipping area might be 5 to 15 feet deep. Facilities with flat tipping areas offer greater safety in terms of reducing the height of falls, but they present their own hazards. These include standing and walking on floor surfaces that could be slick from recent waste material and being close to station operating equipment that removes waste after each load is dumped. Depending on the station design (pit or flat floor), a number of safety measures should be considered to reduce the risk of falls.

- For direct gravity loading of containers by citizens, a moderate grade separation will reduce the fall distance. For example, some facilities place rolloff boxes 8 feet below grade to facilitate easy loading of waste into the container (so the top of the rolloff box is even with the surrounding ground). This approach, however, creates an 8-foot fall hazard into an empty rolloff box. Alternatively, the rolloff box can be set about 5 feet below grade, with the sides extending about 3 feet above the floor. This height allows for relatively easy lifting over the box's edge, yet is high enough to reduce the chance of accidental falls.
- For pit-type operations, the pit depth can be tapered to accommodate commercial unloading at the deep end (typically 8 to 12 feet) and public unloading at the shallow end (3 to 6 feet).
- Safety barriers such as chains or ropes can be installed around the pit edges to prevent falls. These barriers might get in the way of unloading waste, but they are an essential protective measure. The height of these restraint systems must allow for the fact that many self-haul vehicles (pickup trucks) are unloaded by the customer standing in the truck bed.
- Substantial wheel stops can be installed on the facility floor to prevent vehicles from backing into a pit or bin. Some curbs are removable to facilitate cleaning.
- Locating wheel stops a good distance from the edge of the unloading zone ensures that self-haul customers will not find themselves dangerously close to a ledge or the operating zone for station equipment.
- To prevent falls due to slipping, the floor should be cleaned regularly and designed with a skid-resistant surface. Designers need to provide sufficient slope in floors and pavements so that they drain readily and eliminate standing water. This is especially crucial in cold climate areas where icing can cause an additional fall hazard.

Because of transfer stations' large size and volume and the constant flow of vehicles, it is impractical to design and operate them as heated facilities.

- Use of colored floor coatings (such as bright red or yellow) in special hazard zones (including the area immediately next to a pit) can give customers a strong visual cue.
- Designing unloading stalls for self-haul customers with a generous width (at least 12 feet) maximizes the separation between adjacent unloading operations and reduces the likelihood of injury from activity in the next stall. For commercial customers, stall widths of at least 15 feet are needed to provide a similar safety cushion. This is particularly necessary where self-haul and commercial stalls are located side-by-side.
- If backing movements are required, design the facility so vehicles back in from the driver's side (i.e., left to right) to increase visibility.

Noise

Unloading areas can have high noise levels due to the station's operating equipment, the unloading operation and waste movement, and customer vehicles. Backup safety alarms and beepers required on most commercial vehicles and operating equipment also can be particularly loud. The noise level also might cause customers not to hear instructions or warnings or the noise from an unseen approaching hazard.

Designers have limited options for dealing with the noise problem. The principal way to reduce the effects of high-decibel noise in enclosed tipping areas is to apply a sound-absorbing finish over some ceiling and wall surface areas. Typically, spray-on acoustical coatings are used. These finishes have a drawback, however. They tend to collect dirt and grime and are hard to keep clean and bright. Using a rubber shoe on the bottom of waste-moving equipment buckets and blades and avoiding use of track-type equipment that produce high mechanical noise also limits noise. These approaches, however, can affect the transfer system's operational efficiency. Regardless of which approaches are employed, transfer station employees exposed to high levels of noise for prolonged periods of time should use earplugs or other protective devices to guard against hearing damage.

Air Quality

Tipping areas often have localized air quality problems (dust and odor) that constitute a safety and health hazard. Dust in particular can be troublesome, especially where dusty, dry commercial loads (e.g., C&D wastes) are tipped. Prolonged exposure to air emissions from waste and motorized vehicles operating inside the building provides another potential health threat to facility employees. Facility air quality issues can be addressed through a number of design and operational practices. These include:

- Water-based dust suppression (misting or spray) systems used to "knock down" dust. Different types of systems are available. They typically involve a piping system with an array of nozzles aimed to deliver a fine spray to the area where dust is likely to be generated (e.g., over the surge pit). They typically are actuated by station staff "on demand" when dust is generated. Dust suppression systems can operate using water only or can have an injection system that mixes odor-neutralizing compounds (usually naturally occurring organic extracts) with the water. These dual purpose systems effectively control both dust and odors.
- Use of handheld hoses to wet down the waste where it is being moved or processed, typically in a pit. Designers need to consider using convenient reel-mount hoses for this purpose.
- Ventilation systems can provide some measure of air quality control on a limited basis inside enclosed transfer buildings. Because these structures generally require high roofs and large floor areas, it is usually impractical to develop the air velocities needed to entrain dust particles. The most practical approach is to concentrate the fans

and air removal equipment above the dustiest and most odor-prone area to create a positive flow of air from cleaner areas. This approach usually gives the customer area some measure of protection. Often, the air-handling equipment is designed with multiple speed fans and separate fan units that can be activated during high dust or odor events. Filtering and scrubbing exhaust air from transfer stations has so far proven difficult and expensive, again due to the very large volumes of air that must be handled.

- If employees' direct exposure to harmful emissions from vehicles and waste at the facility is not sufficiently minimized, respiratory aids such as masks might be necessary.

Hazardous Wastes and Materials

While MSW is generally nonhazardous, some potentially hazardous materials such as pesticides, bleach, and solvents could be delivered to a transfer station. Facility operators should ensure that employees are properly trained to identify and handle such materials. Some stations have a separate household hazardous waste (HHW) receiving and handling area. If the transfer station operates a program that manages HHW, the material is often collected by appointment only, during designated hours, or during special single or multiple day events.

All transfer stations need to be equipped to handle the occasional occurrence of hazardous waste, real or suspected, mixed with other wastes. Personal protective equipment such as goggles, gloves, body suits, and respirators should be on hand and easily accessible to employees. Because staff or customers might inadvertently come in contact with a hazardous substance, it is also good practice, and often required by code, to have special eyewash and shower units in the operating areas. Typically, the transfer station's operating plan will outline detailed procedures to guide station personnel in identifying and managing these kinds of wastes. Many stations have a secure area with primary and secondary containment barriers near the main tipping area where suspect wastes can be placed pending evaluation and analysis. Public education efforts can reduce the likelihood of hazardous materials showing up in solid waste.

Facility Oversight

This section describes the types of regulations that generally apply to transfer stations and addresses typical regulatory compliance methods.

Applicable Regulations

Transfer stations are affected by a variety of federal, state, tribal, and local regulations, including those related to noise, traffic impact mitigation, land use, workplace safety, taxes, employee right-to-know, and equal employment opportunity that are applicable to any other business or public operation. Many jurisdictions also have regulations specifically applicable to transfer stations. These regulations typically emphasize the protection of public health and the environment.

Federal Regulations

No federal regulations exist that are specifically applicable to transfer stations. EPA, however, initiated a rulemaking process exclusively for marine waste transfer stations under authority of the Shore Protection Act in 1994. These rules would regulate vessels and marine transfer stations in the U.S. coastal waters. EPA is currently working with the U.S. Coast Guard on finalizing these rules.

State Regulations

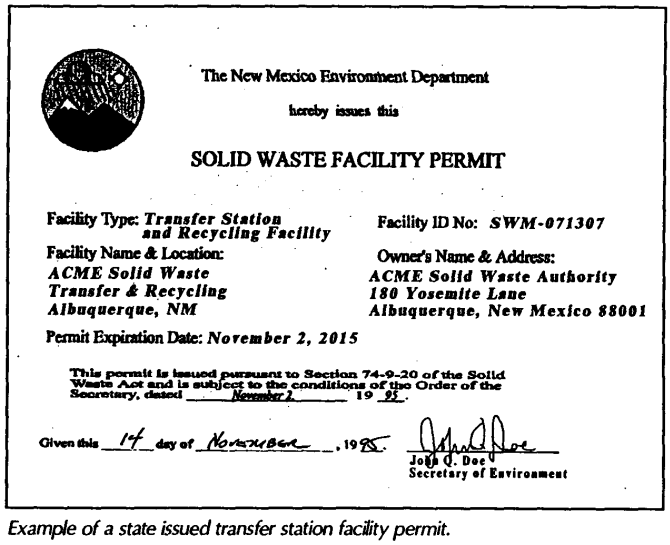
State solid waste regulatory programs usually take primacy in transfer station permitting, although local zoning and land use requirements apply as well. State regulations vary widely. Some have no regulations specific to transfer stations; others mention them as a minor part of regulations that generally apply to solid waste management; and others have regulations specifically addressing transfer station issues such as design standards, operating standards, and the maximum amount of time that waste can be left on site. A few states also require transfer stations to have closure plans and to demonstrate financial assurance, while others require certification of key personnel. Some states also require compliance with regional solid waste planning efforts or demonstrations of "need."

Appendix A provides a state-by-state checklist of major transfer station regulatory issues. Appendix A shows that:

- All but five states require waste transfer stations to have some type of permit, permit-by-rule, or state license to operate.
- All 50 states have at least minimal operating standards for waste transfer stations either through regulations, statutes, operating plans, or construction permits.
- Some states require analysis of transfer station impacts under general environmental review procedures.

Local Regulations

Local regulation of transfer stations can take many forms. Typical regulatory bodies include counties, cities, regional solid waste manage-



The New Mexico Environment Department

hereby issues this

SOLID WASTE FACILITY PERMIT

Facility Type: *Transfer Station and Recycling Facility*

Facility ID No: *SWM-071307*

Facility Name & Location:
ACME Solid Waste Transfer & Recycling Albuquerque, NM

Owner's Name & Address:
ACME Solid Waste Authority 180 Yosemite Lane Albuquerque, New Mexico 88001

Permit Expiration Date: *November 2, 2015*

This permit is issued pursuant to Section 74-9-20 of the Solid Waste Act and is subject to the conditions of the Order of the Secretary, dated November 2, 19 95.

Given this 14 day of November, 1995.

John Q. Doe
Secretary of Environment

Example of a state issued transfer station facility permit.

ment authorities, health departments, and air pollution control authorities.

Counties, cities, and regional authorities often are required to prepare comprehensive solid waste management plans describing long-range plans for waste prevention, recycling, collection, processing (including transfer stations), and disposal. Other local regulations likely to apply to transfer stations include zoning ordinances, noise ordinances, and traffic impact analysis.

Public health departments are involved with transfer stations because of the potential health concerns if solid waste is improperly managed. In some states, the state environmental protection agency delegates authority to local health departments to oversee solid waste management facilities, including transfer stations. This typically includes overseeing general compliance with a facility's operating permit; regular cleaning of the tipping floor; limits on the amount of waste the facility can accept; and employment of adequate measures to prevent vectors such as rats, birds, and flies from contacting waste.

Local or regional air pollution control authorities often regulate odor, dust, and vehicle exhaust emissions at transfer stations. Air pollution control agencies might regulate chemicals used to control odor, exhaust from vents on the facility's roof or walls, and whether dusty loads can be delivered to the transfer station. The local sanitary district often establishes waste water standards and might be involved in storm water management and protection.

Common Regulatory Compliance Methods

Compliance Inspections

Many transfer stations are inspected periodically for compliance with the transfer station's operating permit and other applicable regulations. The entity responsible for performing inspections and the frequency and level of detail of inspections vary widely around the country. Some inspections are complaint driven, some occur on a regular frequency, and some occur on a random basis. A typical inspection involves a representative of the local health department or state or tribal solid waste regulatory program walking through the facility, looking for improper waste storage or handling methods and writing up a short notice of compliance or noncompliance.

Other inspections for specific issues are also conducted. Special inspections might target workplace safety, proper storm-water runoff management, and compliance with applicable roadway weight limits for transport vehicles.

Reporting

Some transfer station operators are required to compile monthly, quarterly, or annual reports for submission to regulatory agencies and host communities. These reports typically include the following information:

- Weight (tons) and loads (number of customers) received at the transfer station each month. This sometimes includes details such as day of the week, time of day, type of waste, name of hauler, and origin of waste.
- Weight (tons) and loads (number of transfer truck shipments) shipped from the transfer station each month. This sometimes includes a breakdown by time shipped, type of waste, and the final destination of the waste.
- A description of any unusual events that took place at the transfer station, including accidents and discoveries of unacceptable waste.
- A summary of complaints received and the actions taken to respond to the complaints.

Leon County, Florida. *Leon County Solid Waste Transfer Station: Noise Study Report.* February 2000 (Draft).

Lund, Herbert F. 1992. *Solid Waste Handbook.* McGraw-Hill Companies.

National Environmental Justice Advisory Council. 2000. *A Regulatory Strategy for Siting and Operating Waste Transfer Stations,* (EPA500-R-00-001). Washington, DC.

Solid Waste Association of North America. 2000. *Certification Course Manual: Managing Transfer Station Systems.* SWANA. Washington, DC.

Tchobauoglous, George, Hilary Theisen, and Samuel A. Vigil. 1993. *Integrated Solid Waste Management: Engineering Principles and Management Issues.* McGraw-Hill Companies.

U.S. EPA, Office of Solid Waste and Emergency Response. 2000. *Waster Transfer Stations: Involved Citizens Make the Difference,* (EPA530-K-01-003). Washington, DC.

U.S. EPA, Office of Solid Waste and Emergency Response. 1995. *Decision-Maker's Guide to Solid Waste Management,* Second Edition (EPA 530-R-95-023). Washington, DC.

DuPage County Solid Waste Department. 1998. *Solid Waste Transfer in Illinois: A Citizen's Handbook on Planning, Siting and Technology.* Weaver Boos & Gordon, Inc. (For information on ordering copies of the DuPage County publication entitled *Solid Waste Transfer in Illinois: A Citizen's Handbook on Planning, Siting and Technology* contact Kevin T. Dixon, Director, Solid Waste Department, DuPage County Center, 421 N. Country Farm Road, Wheaton, Illinois 60187, telephone (630)682-7373.)

Baler: This technology compresses waste into high-density, self-contained units (bales) of either waste or recyclables. Baled waste is transported on flatbed trailers (as opposed to transfer trailers) and is most often sent to a "balefill" that has special equipment (e.g., forklifts).

Buffer zone (also setback): The distance between the transfer station or roadways and adjacent properties; often used for screening.

Collection vehicle: Residential collection vehicles include front-loading and rear-loading garbage trucks, as well as special trucks with compartments used to pickup source-separated recyclables. Commercial (businesses), institutional (hospitals and schools), and industrial (plants) waste, as well as C&D waste, is often discarded in rolloff boxes, which are dropped at the facility and then collected on schedule.

Construction and demolition debris (C&D): Includes broken concrete, wood waste, asphalt, rubble. This material can often be separated for beneficial use.

Convenience center (also citizen's dropoff or green box): Small transfer facilities used in low-volume or rural settings. These low-technology options often use rolloff boxes with an inclined ramp for cars and pickups. Bins can be included for recyclables that are source-separated.

Direct haul: The historic practice of sending collection vehicles (mostly garbage trucks) directly to the landfill without using transfer stations. When landfills were close to the waste sources, a residential collection vehicle customarily made two trips per day to the landfill.

Host community benefits: A transfer station or landfill operator can offer specific benefits to the community selected for a proposed facility. The benefits are listed in a Host Community Agreement. Benefits can include cash, free tipping, highway improvements, and tax reductions.

Household hazardous wastes (HHW): HHW come from residences, are generally produced in small quantities, and consist of common household discards such as paints, solvents, herbicides, pesticides, and batteries.

Loadout: The process of loading outbound transfer trailers with waste; or loading trucks with recyclables destined for the market.

Municipal solid waste (MSW): Generally defined as discards routinely collected from homes, businesses, and institutions, and the nonhazardous discards from industries.

Queuing distance: The space provided for incoming trucks to wait in line.

Source-separated: Recyclables discarded and collected in containers separate from non-recyclable waste. Bins or blue bags are used to separate residential recyclables; separate boxes or containers are used for commercial/industrial discards (e.g., corrugated cardboard packaging, wood pallets). Source-separated wastes usually are delivered to a material recovery facility.

Surge pit: A pit usually made of concrete that receives waste from the tipping floor. Surge pits provide more space for temporary storage at peak times and allow for additional compaction of waste before loadout.

Tipping fee: The unit price charged at the disposal site or transfer station to accept waste, usually expressed as dollars per ton or dollars per cubic yard.

Tipping floor: The floor of the transfer station where waste is unloaded (tipped) for inspection, sorting, and loading.

Tons per day (TPD): The most common unit of measurement for waste generation, transfer, and disposal. Accurate TPD measurements require a scale; conversion from "cubic yards" without a scale involves estimated density factors.

Walking floor: A technology built in to lightweight transfer trailers and used to unload waste at the disposal site. Moving panels "walk" the waste out of the trailer bed.

Waste diversion: The process of separating certain materials at the transfer station to avoid the cost of hauling and the tipping fee at the landfill.

Waste screening: Inspecting incoming wastes to preclude transport of hazardous wastes, dangerous substances, or materials that are incompatible with transfer station or landfill operations.

The table starting on page A-2 is designed to serve as a quick reference guide and comparative index of all state transfer station regulations. Almost all of these regulations are available over the Internet, and the URLs are provided at the end of this section.

Permit Requirements. Nearly all states require transfer facilities to obtain a permit before beginning operations. The vast majority of states issue standard permits after a transfer station's application has been reviewed and approved. A few states have permit-by-rule provisions, which allow transfer stations to forego the application process by demonstrating compliance with a set of designated standards. Of the states not requiring permits for transfer stations, about half require the facility to register with the state prior to beginning operation.

Siting Requirements. Siting requirements refer to any additional regulatory requirements beyond relevant and applicable state or local zoning requirements or conditions. Siting requirements could include prohibitions against siting in or near wetlands, flood plains, endangered species habitats, airports, or other protected sites.

Design Standards. Nearly all states have at least minimal design criteria for transfer stations. These requirements typically set standards for waste receiving areas and waste-storage areas that include building structural features, access control, vector control, and dust and odor controls.

Operational Standards. These standards establish how the transfer station will be run and how wastes will be handled. Standards often include hours of operation, safety issues, litter control, dust and odor control, disease vector control, facility cleaning/sanitation practices, waste removal, traffic control, and contingencies.

Operator Certification. Only five states have mandatory operator certification for transfer station operators (Arkansas, New Hampshire, New Mexico, New York, and Ohio). Other state regulations stipulate that a transfer station operator must be a "qualified solid waste manager" but do not have requirements for any specific type of certification.

Storage Restrictions. Many states have established time limits on how long waste may remain in a transfer station. Storage time restrictions vary from state to state, and sometimes even within a state, depending upon the size of the transfer station.

Recordkeeping Requirements. The majority of states require a transfer station to maintain onsite records of all incoming and outgoing waste as well as copies of the facility permit, operating plan, contingency plan, and proof of financial assurance, when such things are applicable.

Reporting Requirements. Many states require transfer stations to submit reports at least annually to the state environmental agency. These reports often include information such as the name and location of the transfer station, the amounts and types of waste accepted, and the source and final destination of this waste.

Monitoring Requirements. Monitoring refers to any surface water, soil, or air compliance monitoring that a transfer station may be required to perform by its state.

Closure Requirements. Closure requirements include standards or timetables for removing wastes and cleaning the transfer station site after the facility stops receiving waste and permanently ends operations. Most states with closure requirements require transfer stations to remove all wastes and close the facility in a manner that eliminates any threats to human health and the environment and minimizes the need for further maintenance.

Financial Assurance Requirements. Some states require transfer stations to demonstrate that they have sufficient funds to properly close the facility when it ceases operation. Financial assurance mechanisms often include trust funds, insurance policies, letters of credit, or other financial tests.

State Transfer Station Regulations

State	Regulation	Permit Requirements	Siting Requirements	Design Standards	Operational Standards	Operator Certification
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alaska	18 AAC 60	No	No	No	Yes	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arkansas	Reg. 22, Chapter 9	Yes	Yes	Yes	Yes	Yes
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Colorado	6 CCR 1007-2	No[4]	No	Yes	Yes	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Delaware	Delaware S.W. Regs., Section 10	Yes	Yes	Yes	Yes	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Georgia	Chapter 391-3-4	Yes - Permit-by-rule, must notify state	No	No	Yes	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Idaho (current rules	IDAPA 58.01.06	Yes - Conditional use permit	No	No	Yes	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Illinois	IAC Title 35, Subtitle G, Chapter I, Subchapter I, Part 807, Subparts A&B	Yes	No	No (Yes)[6]	No (Yes)	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Iowa	IAC 567 Chapter 100	Yes	No	Yes	Yes	No
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Storage Restrictions	Recordkeeping Requirements	Reporting Requirements	Monitoring Requirements	Closure Requirements	Financial Assurance Requirements
[illegible]	Yes	[illegible]	[illegible]	[illegible]	No
No	No	No	No	No	No
[illegible]	No	[illegible]	[illegible]	[illegible]	No
Yes - No extended storage of putrescibles	Yes	Yes - periodic	No	No	Yes - At state discretion
[illegible]	Yes	[illegible]	[illegible]	[illegible]	[illegible]
Yes - No overnight storage on tipping floor	Yes	No	No	Yes	No
[illegible]	Yes	Yes	[illegible]	[illegible]	[illegible]
Yes - 72 hours, all overnight storage in enclosures	Yes	Yes	Possible - State may require post-closure monitoring	Yes	Yes
[illegible]	Yes	[illegible]	[illegible]	[illegible]	[illegible]
No	No	No	No	Yes	No
[illegible]	Yes	Yes - Annual by June 30	[illegible]	[illegible]	[illegible]
No	Yes	No	No	No	No
[illegible]	Yes	[illegible]	[illegible]	[illegible]	[illegible]
No (Yes)	No (Yes)	No (Yes)	No	Yes	No
[illegible]	Yes	Yes - Annual by January 31 and quarterly reports	[illegible]	[illegible]	Yes
Yes - 72 hours	No	No	No	Yes	No
Yes - Loaded into transfer vehicle next day	Yes	Yes - Annual by March 1	Possible - At state's discretion	Yes	Yes

State	Regulation	Permit Requirements	Siting Requirements	Design Standards	Operational Standards	Operator Certification
Kentucky	10 KAR 47	Yes - Registered permit by rule	Yes	No	Yes	No
Louisiana	LAC 33: VII Subpart I	Yes	Yes	Yes	Yes	No
Maine	ME SW Mgt. Rules Chapter 102	Yes	Yes	Yes	Yes	No
Maryland	Title 26 Chapter 07	Yes	No	Yes	Yes	No
Massachusetts	310 CMR 16.00 & 19.000	Yes	Yes	Yes	Yes	No
Michigan	MAC R299, Part 5	Yes	Yes	Yes	Yes	No
Minnesota	Chapter 7035	Yes	Yes	Yes	Yes	No
Mississippi	Section V	Yes	Yes	Yes	Yes	No
Missouri	10 CSR 80-5	Yes	Yes	Yes	Yes	No
Montana	ARM Title 17 Chapter 50, Sub-Chapters 4 and 5	Yes	Yes	Yes	Yes	No
Nebraska	Title 132	Yes	Yes	Yes	Yes	No
Nevada	NAC 444.666	No[7]	No	Yes	Yes	No
New Hampshire	NHCAR Env-Wm Chapters 3418.2100 RSA 149M	Yes	Yes	Yes	Yes	Yes
New Jersey	NJAC 7:26	Yes	Yes - Must perform an EHIS	Yes	Yes	No
New Mexico	20 NMAC 9.1	Yes	No	No	Yes	Yes
New York	6 NYCRR Part 360	Yes	Yes	Yes	Yes	Yes
North Carolina	NCAC Title 15A, Subchapter 13B	Yes	No	No	Yes	No

Storage Restrictions	Recordkeeping Requirements	Reporting Requirements	Monitoring Requirements	Closure Requirements	Financial Assurance Requirements
[illegible]	Yes	No	[illegible]	[illegible]	No
No	Yes	Yes - Annual, by August 1	No	Yes	Yes
[illegible]	Yes	[illegible]	[illegible]	Yes	Yes
Yes - No overnight storage, unless in containers	No	Yes - Annual	No	No	No
[illegible]	Yes	No	[illegible]	[illegible]	Possible - At state's discretion
Yes - No overnight, unless in closed containers	No	No	No	No	No
[illegible]	Yes	[illegible]	[illegible]	[illegible]	No
Yes - Waste removed at least once per week	Yes	No	No	No	No
[illegible]	Yes	No	[illegible]	[illegible]	Yes
Yes - waste containers emptied at least once a week	No	Yes - Annual, by April 1	No	No	No
[illegible]	Yes	No	[illegible]	[illegible]	[illegible]
Yes - 72 hours after acceptance	Yes	No	No	Yes	No
[illegible]	Yes	[illegible]	[illegible]	[illegible]	[illegible]
Yes - No overnight storage	Yes	Yes - Monthly	No	No	No
[illegible]	Yes	[illegible]	[illegible]	[illegible]	[illegible]
Yes - When all containers full or 7 days	Yes	Yes	Yes	Yes	Possible - At state's discretion
[illegible]	No	No	Possible - At state's discretion	No	No

State	Regulation	Permit Requirements	Siting Requirements	Design Standards	Operational Standards	Operator Certification
North Dakota	Article 33-20	Yes	Yes	Yes	Yes	No
Ohio	3745-27-(15, 21-24)	Yes	Yes	Yes	Yes	Yes
Oklahoma	OAC 252:515-3	Yes	Yes	No	Yes	No
Oregon	OAR Chapter 340, Division 96	Yes	No	Yes	Yes	No
Pennsylvania	25 PA Code Chapt. 271, 273	Yes	Yes	Possible on case-by-case basis	Yes	No
Rhode Island	Solid Waste Regulation No.1 & No.3	Yes	Yes	Yes	Yes	No
South Carolina	Chapter 61 Part 3(H.1.b)(7)	Yes	Yes	Yes	Yes	No
South Dakota	Article 74:27	Yes	No	Yes	Yes	No
Tennessee	Chapter 1200-1-7	Possible Permit-by-rule	Yes	Yes	Yes	No
Texas	30 TAC, Chapter 330	Yes	Yes	Yes	Yes	No
Utah	R315-310	No	No	Yes	Yes	No
Vermont	Chapter 6	Yes	Yes	Yes	Yes	No
Virginia	Title 9 VAC 20-80-40	Yes - Permit by rule	Yes	Yes	Yes	No
Washington	WAC 173-304	Yes	No	Yes	Yes	No
West Virginia	33 CSR 1	Yes	Yes	Yes	Yes	No
Wisconsin	NR 502.07	Yes	Yes	Yes	Yes	No
Wyoming	3292 Chapter 6	Yes	Yes	Yes	Yes	No

Storage Restrictions	Recordkeeping Requirements	Reporting Requirements	Monitoring Requirements	Closure Requirements	Financial Assurance Requirements
No	Yes	Yes	No	Yes	No
Yes - Must be in covered container or building if stored longer than 12 hours	Yes	Yes - Annual, by April 1	Possible - At state's discretion	Yes	Yes
Yes - 24 hours [illegible]	Yes	Yes - Monthly, by the 10th of [illegible]	[illegible]	Yes	Yes
No	Possible - At state's discretion	Possible - At state's discretion	No	No	No
Yes - 24 hours [illegible]	Yes	Yes - Annual, [illegible]	Possible - At state's discretion	Yes	Yes
Yes - Remove combustible SW within 48 hours	No	No	No	Yes	Yes - Though state may wave if decides unnecessary
Yes - Remove putrescibles within 24 hours	Yes	No	Possible - At state's discretion	Yes	No
No	Yes	No	No	Yes	No
[illegible]	Yes	No	No	Yes	Yes - If facility has storage capacity of 1000 yds² or greater
No	Yes	No	No	Yes	Possible
Yes - 7 days	Yes	Yes - Annual, by March 1	No	Yes	No
Yes - Remove waste from tipping floor by end of operating day	Yes	Yes - Quarterly	No	Yes	Yes
Yes - Remove waste at end of workday	No	No	No	Yes	Yes
No	Yes	Yes - Annual, by March 1	No	Yes	No
Yes - Remove waste [illegible] day but not more than 24 hours	Yes	Yes - Monthly tonnage reports and annual by January 31	No	Yes	Yes
Yes - 24 hours (with some exceptions)	No	No	Possible - At state's discretion	Yes	Possible - At state's discretion
No	Yes	No	Possible - At state's discretion	Yes	Yes

Notes

1. Arizona currently does not have regulations governing waste transfer stations, but the Arizona Revised Statutes (ARS) have requirements that govern these facilities. The information in this matrix reflects these statutory requirements found at ARS 49-762.
2. In Arizona transfer stations that receive greater than 180 cubic yards/day must self-certify and demonstrate that the facility is in compliance with state rules. Transfer stations receiving less than 180 cubic yards/day must notify the state prior to commencement of operations and operate in accordance with state BMPs.
3. California classifies a transfer station as a facility if it receives greater than 60 cubic yards or 15 tons of waste per day or as an operation if it receives less than 60 cubic yards or 15 tons of waste per day.
4. While Colorado does not require a permit for transfer stations, the local governing body (county or municipal government) may.
5. Idaho has proposed a three-tiered system based upon the type of waste handled at a facility. This matrix assumes a solid waste transfer station would be considered a Tier II facility.
6. Illinois does not have explicit design, operating, storage, recordkeeping, or reporting requirements in its regulations. The state establishes these standards for each facility by requiring a facility to demonstrate in its permit application that it will meet specific standards. The Illinois regulations require a facility to provide to the state all the information requested in its permit application and once the permit is approved to comply with the terms of its permit.
7. While no permit is required in Nevada, a facility must submit and have approved by the state an application to build or modify a transfer station prior to any action being taken.
8. In Tennessee transfer stations that compact or otherwise process waste are considered "processing facilities" and are subject to the permit-by-rule requirements. If no processing occurs at a transfer station, then the facility is not subject to permitting. Tennessee currently has rule amendments under review which would make all transfer stations subject to the permit-by-rule standards. The responses in this appendix apply to permit-by-rule facilities.
9. While Utah does not require a transfer station to obtain a permit, it does require a transfer station to get a plan approval. In a plan approval, the operator states how the facility will meet the transfer station guidelines found in the solid waste regulations.

Web Addresses for State Transfer Station Regulations

Alabama: <www.adem.state.al.us/rules.html> Note: Chapter 420-3-5: Solid Waste Collection and Transportation Rules contain regulations governing transfer stations but are not available on Alabama Public Health Web site <www.alapubhealth.org/>.

Alaska: <www.state.ak.us/local/akpages/ENV.CONSERV/title18/title18.htm>

Arizona: Arizona Administrative Code <www.sosaz.com/public_services/Table_of_Contents.htm>. Applicable statutes are located at <www.azleg.state.az.us/ars/49/title49.htm>

Arkansas: <www.adeq.state.ar.us/regs/reg22.htm>

California: <www.ciwmb.ca.gov/Law.htm>

Colorado: <www.cdphe.state.co.us/cdphereg.asp>

Connecticut: Regulations are not yet available on the Internet (as of 11/3/00).

Delaware: <www.dnrec.state.de.us/> (See Division of Air and Waste Management /Solid Waste Management Program/ Solid Waste Regulations.)

Florida: <www.dep.state.fl.us/dwm/rules/numeric.htm>

Georgia: <www.ganet.org/dnr/environ/>

Hawaii: <www.state.hi.us/health/eh/shwb/sw/index.html>

Idaho: <www2.state.id.us/adm/adminrules/rules/IDAPA58/58INDEX.HTM> or <www2.state.id.us/deq/rules/06-9701.htm> - Idaho has proposed new solid waste management rules, which will include additional requirements for transfer stations. See <www2.state.id.us/adm/adminrules/bulletin/99index.htm> - Select Bulletin 99-8, Vol. 1.

Illinois: <www.ipcb.state.il.us/title35/35conten.htm>

Indiana: <www.state.in.us/idem/olq/regulations_and_laws/swrules.html>

Iowa: <iac.legis.state.ia.us/ileaf/index.html>

Kansas: <www.kdhe.state.ks.us/waste/#regs>

Kentucky: <www.nr.state.ky.us/nrepc/dep/waste/regs/regulati.htm>

Louisiana: <www.deq.state.la.us/planning/regs/title33/index.htm>

Maine: <www.state.me.us/sos/cec/rcn/apa/06/chaps06.htm>

Maryland: <209.15.49.5/dsd_web/default.htm>

Massachusetts: <www.magnet.state.ma.us/dep/matrix.htm>

Michigan: </www.deq.state.mi.us/wmd/SWP/sw_r&s.htm>

Minnesota: <www.pca.state.mn.us/rulesregs/index.html>

Mississippi: <www.deq.state.ms.us/newweb/homepages.nsf>

Missouri: <mosl.sos.state.mo.us/csr/10csr.htm>

Montana: <www.deq.state.mt.us/dir/Legal/Chapters/Ch50-toc.htm>.

Nebraska: <www.deq.state.ne.us/RuleandR.nsf/Pages/Rules>

Nevada: <www.state.nv.us/ndep/admin/nrs.htm>

New Hampshire: <http://www.des.state.nh.us/desadmin.htm>

New Jersey: <www.state.nj.us/dep/dshw/resource/rules.htm>

New Mexico: <ftp://www.nmenv.state.nm.us/regulations/20nmac9_1.txt>

New York: <www.dec.state.ny.us/website/regs/index.html>

North Carolina: <wastenot.ehnr.state.nc.us/swhome/rule.htm>

North Dakota: <www.health.state.nd.us/ndhd/environ/wm/regs/toc.htm>

Ohio: <www.conwaygreene.com/anderson.htm>

Oklahoma: <www.deq.state.ok.us/rules/rulesindex.htm>

Oregon: <arcweb.sos.state.or.us/rules/OARS_300/OAR_340/340_tofc.html>

Pennsylvania: <www.pacode.com/>

Rhode Island: <www.state.ri.us/dem/regs.htm#WM>

South Carolina: <www.lpitr.state.sc.us/coderegs/statmast.htm>

South Dakota: <www.state.sd.us/state/legis/lrc/rules/7427.htm>

Tennessee: <www.state.tn.us/sos/rules/1200/1200-01/1200-01.htm>

Texas: <www.tnrcc.state.tx.us/oprd/rules/indxpdf.html>

Utah: <www.deq.state.ut.us/eqshw/swrules.htm>

Vermont: <www.anr.state.vt.us/dec/rules/rulessum.htm>

Virginia: <www.deq.state.va.us/regulations/wasteregs.html>

Washington: <access.wa.gov/government/awlaws.asp>

West Virginia: <www.state.wv.us/csr/>

Wisconsin: <www.legis.state.wi.us/rsb/code/nr/nr500toc.html>

Wyoming: <soswy.state.wy.us/cgi-win/sscgi_1.exe>