

SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

**FORM S-3**

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**

*(Exact name of registrant as specified in charter)*

**DELAWARE**

*(State or other jurisdiction of  
incorporation or organization)*

**58-1954497**

*(I.R.S. Employer Identification No.)*

**1940 Northwest 67th Place  
Gainesville, Florida 32653  
(352) 373-4200**

*(Address, including zip code, and telephone number, including area code, of registrant's principal executive office)*

**DR. LOUIS F. CENTOFANTI  
Chairman of the Board  
Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32653  
(352) 373-4200**

*(Address, including zip code, and telephone number, including area code, of agent for service)*

Copy to:

**Irwin H. Steinhorn, Esquire  
Conner & Winters, A Professional Corporation  
One Leadership Square, Suite 1700  
211 North Robinson  
Oklahoma City, Oklahoma 73102  
(405) 272-5711**

Approximate date of commencement of proposed sale to the public: **As soon as practicable after this Registration Statement becomes effective.**

If the only securities being registered on this form are being offered pursuant to a dividend or interest reinvestment plans, please check the following box: ☐

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box: ☒

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering: ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering: ☐

If delivery of the prospectus is expected to be made pursuant to Rule 434, check the following box: [ ]

**The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until this registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.**

#### **CALCULATION OF REGISTRATION FEE**

<b>Title of Each Class of Securities to be Registered</b>	<b>Number of Shares to be Registered</b>	<b>Proposed Maximum Offering Price Per Share</b>	<b>Proposed Maximum Aggregate Offering Price</b>	<b>Amount of Registration Fee</b>
Common Stock	21,619,722 <sup>(1)</sup>	\$ 2.69 <sup>(2)</sup>	\$58,157,052 <sup>(3)</sup>	\$14,539.26

- (1) Includes (a) 250,000 shares which have been or may be issued by the Company in payment of dividends accrued on the Series 17 Class Q Preferred Stock ("Series 17 Preferred"); (b) 1,666,667 shares issuable upon conversion of the Series 17 Preferred; (c) 1,944,242 shares which have been issued by the Company in connection with a stock purchase agreement; (d) 4,397,566 shares which have been issued by the Company pursuant to private placement; (e) 1,999,437 shares which have been issued pursuant to an exchange agreement; and (f) 13,306,052 shares issuable by the Company upon the exercise of various warrants having exercise prices ranging from \$1.20 to \$1.9688.
- (2) Estimated solely for the purposes of calculating the registration fee in accordance with Rule 457(c) and (g) on the basis of the average of the high and low price as quoted on the NASDAQ Small Cap Market on September 24, 2001.
- (3) Estimated in accordance with Rule 457(g) for the purpose of calculating the registration fee.

**Subject to Completion: Dated October 1, 2001**

**PROSPECTUS**

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# PermaFix

environmental services

**21,619,722 Shares**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**

**Common Stock**

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This prospectus relates to the offer or sale of up to 21,619,722 shares of Perma-Fix Environmental Services, Inc. common stock, or the Shares, from time to time by the Selling Stockholders listed in this prospectus. We will not receive any proceeds from the sale of the Shares by the Selling Stockholders.

Our common stock is traded on the Nasdaq SmallCap Market under the symbol "PESI" and on the Boston Stock Exchange under the symbol "PES." On September 24, 2001, the closing price of our common stock as reported on the Nasdaq SmallCap Market was \$2.63.

The Company has agreed to pay all the costs and fees relating to the registration of the Shares covered by this prospectus. However, the Company will not pay any discounts, concessions, or commissions payable to underwriters, dealers, or agents incident to the offering of the Shares or the fees and expenses incurred by counsel for the Selling Stockholders.

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**Investment in these securities involves a high degree of risk.  
See "RISK FACTORS" beginning on page 2 of this prospectus.**

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**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved these securities or passed upon the adequacy of this prospectus.  
Any representation to the contrary is a criminal offense.**

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The date of this prospectus is \_\_\_\_\_, 2001.

The information in this prospectus is not complete and may be changed. These securities may not be sold until the related registration statement filed with the SEC is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

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## ABOUT OUR BUSINESS

We are engaged, through our subsidiaries, in the following lines of business:

### *Industrial Waste Management Services*

Our Industrial Waste Management Services include:

- \* treatment, storage, processing, and disposal of hazardous and nonhazardous waste;
- \* industrial waste and wastewater management services, including the collection, treatment, processing and disposal of hazardous and non-hazardous waste, and the design and construction of on-site wastewater treatment systems; and
- \* various waste management services to certain governmental agencies.

These services are primarily conducted through six of our subsidiaries:

- \* Perma-Fix Treatment Services, Inc. located in Tulsa, Oklahoma;
- \* Perma-Fix of Dayton, Inc. located in Dayton, Ohio;
- \* Perma-Fix of Ft. Lauderdale, Inc. located in Davie, Florida;
- \* Perma-Fix of Orlando, Inc. located in Orlando, Florida;
- \* Perma-Fix of South Georgia, Inc. located in Valdosta, Georgia; and
- \* Perma-Fix of Michigan, Inc. located in Detroit, Michigan.

## *Nuclear Waste Management Services*

Our Nuclear Waste Management Services include:

- \* treatment, storage, processing and disposal of mixed waste (which is both low-level radioactive and hazardous waste); and
- \* nuclear and low-level radioactive waste treatment, processing and disposal, which includes research, development, and on and off-site waste remediation and processing.

These services are primarily conducted through three of our subsidiaries:

- \* Perma-Fix of Florida, Inc. located in Gainesville, Florida;
- \* Diversified Scientific Services, Inc. located in Kingston, Tennessee; and
- \* East Tennessee Materials and Energy Corporation located in Oak Ridge, Tennessee.

## *Consulting Engineering Services*

Our Consulting Engineering Services include broad-scope environmental issues, including environmental management programs, regulatory permitting, compliance and auditing, landfill design, field testing and characterization. These services are primarily conducted through Schreiber, Yonley & Associates, Inc. located in St. Louis, Missouri.

We have grown through both acquisitions and internal development. Our present objective is to focus on the operations, maximize the profitability, and to continue the research and development of innovative technologies for the treatment of nuclear, mixed and industrial waste.

We service research institutions, commercial companies, and governmental agencies nationwide. The distribution channels for services are through direct sales to customers or via intermediaries.

We were incorporated in the State of Delaware in December 1990. Our executive offices are located at 1940 N.W. 67th Place, Gainesville, Florida 32653, and our telephone number is (352) 373-4200. Our home page on the Internet is [www.perma-fix.com](http://www.perma-fix.com). The information contained in our web site is not incorporated by reference in this prospectus.

## **RISK FACTORS**

Prospective purchasers of the Shares pursuant to this prospectus should consider carefully the factors set forth below, as well as the other information contained in this prospectus and incorporated herein by reference.

**We have a history of losses from operations and may continue to incur additional losses in the future which could adversely affect our ability to operate and your investment in our common stock.**

We have reported consolidated net losses in all annual periods, except 1999, when we reported net income of \$1,570,000, before provision for preferred stock dividends, net of \$120,000. For the year ended December 31, 2000, we had an audited net loss of \$556,000, before provision for preferred stock dividends of \$206,000. There is no assurance that we will be able to return to profitability or to become profitable on an annualized basis. Our audited consolidated balance sheet at December 31, 2000, reflected an accumulated deficit of approximately \$21,469,000.

For the three months ended June 30, 2001, we had an unaudited consolidated net loss applicable to common stock of approximately \$746,000 (after taking into account a preferred stock dividend of \$32,000) on unaudited consolidated net revenues of approximately \$17,840,000, as compared to an unaudited consolidated net income applicable to common stock of approximately \$262,000 (after taking into account a preferred stock dividend of \$50,000) on unaudited consolidated net revenues of approximately \$14,492,000 for the three months ended June 30, 2000. For the six-month period ended June 30, 2001, we had an unaudited consolidated net loss applicable to common stock of approximately \$1,318,000 (after taking into account a preferred stock dividend of \$82,000) on unaudited consolidated net revenues of approximately \$36,552,000, as compared to an unaudited consolidated net loss applicable to common stock of approximately \$229,000 (after taking into account a preferred stock dividend of \$104,000) on unaudited consolidated net revenues of approximately \$28,081,000 for the six months ended June 30, 2000.

If we are unable to obtain and sustain profitability on an annualized basis each year in the foreseeable future, such inability would have a material adverse effect on us and our ability to operate.

**Our substantial amount of debt could adversely affect our operations.**

We have a substantial amount of debt. At September 14, 2001, our aggregate consolidated debt was approximately \$31 million. Our leverage could have material adverse consequences on our ability to operate our business, including the following:

- \* our ability to obtain additional financing in the future for refinancing indebtedness, acquisitions, working capital, capital expenditures or other purposes may be impaired;
- \* funds available to us for our operations and general corporate purposes or for capital expenditures will be reduced because a substantial portion of our consolidated cash flow from operations will be dedicated to the payment of the principal and interest on our indebtedness;
- \* we may be more highly leveraged than certain of our competitors, which may place us at a competitive disadvantage;
- \* the agreements governing our long-term indebtedness and credit facility contain certain restrictive financial and operating covenants;

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- \* of an event of default occurs, which is not cured or waived, under financial and operating covenants contained in either our or our subsidiaries' debt instruments, this could result in and have a material adverse effect on us;
- \* we may be more vulnerable to a downturn in general economic conditions; and
- \* certain of the borrowings under our debt agreements have floating rates of interest, which cause us to be vulnerable to increases in interest rates.

Our ability to make principal and interest payments, or to refinance indebtedness, will depend on both our and our subsidiaries' future operating performance and cash flow. Prevailing economic conditions, interest rate levels, and financial, competitive, business, and other factors affect us and our subsidiaries. Many of these factors are beyond our control.

**Our industrial waste management services and nuclear waste management services subject us to potential environmental liability.**

Our business of rendering services in connection with management of waste, including certain types of hazardous waste and low-level radioactive waste, subjects us to significant risks of liability for damages. Such liability could involve, without limitation:

- \* claims for clean-up costs, personal injury or damage to the environment in cases in which we are held responsible for the release of hazardous or radioactive materials;
- \* claims of employees, customers, or third parties for personal injury or property damage occurring in the course of our operations; and
- \* claims alleging negligence or professional errors or omissions in the planning or performance of

our

services or in the provision of our products.

In addition, we could be deemed a responsible party for the cost of cleaning any property which may be contaminated by hazardous substances generated by us and disposed at such property or transported by us to a site selected by us, including properties we own or lease.

**The price of our common stock may be driven down by conversion of our convertible preferred stock and exercise of our outstanding warrants and options.**

The conversion of our outstanding Series 17 Class Q Convertible Preferred Stock, par value \$.001 per share (the "Series 17 Preferred"), could result in an issuance of up to 1,666,667 shares of common stock. The conversion price of the Series 17 Preferred is \$1.50 per share of common stock, subject to adjustment pursuant to certain anti-dilution provisions. We also have outstanding warrants to purchase up to approximately 15,513,802 shares of common stock and outstanding options to purchase up to approximately 2,079,949 shares of common stock (assuming that all options are currently exercisable). The exercise prices of the outstanding warrants and options (assuming that all options are currently exercisable) for purchase of shares of our common stock range from \$1.00 per share to \$5.25 per share, subject to adjustment pursuant to certain anti-dilution provisions.

The conversion of the Series 17 Preferred into, and the exercise of outstanding warrants and options for, common stock would reduce the percentage ownership of existing common stockholders and could, among other things, depress the price of the common stock. This result could detrimentally affect our ability to raise additional equity capital. The issuance of such additional shares of common stock may also result in a change in control.

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**There are a substantial number of shares of common stock eligible for future sale in the public market. The sale of those shares could cause the market price of our common stock to fall. Any future equity issuances by us may have dilution and other effects on our existing stockholders.**

The conversion of our outstanding convertible preferred stock and the exercise of our outstanding options and warrants will result in the issuance of a substantial number of shares of common stock, thereby causing dilution of the common stock. The holders of all of our convertible preferred stock and the holders of many of our warrants and options may immediately sell the full amount of common stock received upon conversion of the convertible preferred stock or exercise of the warrants and options, as applicable. As these shares are sold, the price of the common stock may decrease. Dilution of our common stock may potentially have a substantial and material adverse impact on our earnings per share, as well as on our ability to raise additional equity capital. The issuance of such additional shares of common stock may also result in a change in control.

**Our outstanding preferred stock and warrants subject us to a potential change in control, which could have an adverse effect on our management and our stockholders' ability to direct management.**

As of September 21, 2001, Capital Bank-Grawe Gruppe AG ("Capital Bank"), f/k/a RBB Bank Aktiengesellschaft, owned of record, as agent for certain of its investors, 9,972,914 shares of our common stock, or approximately 29.5% of the outstanding shares of common stock. Capital Bank is also the owner of record of:

- \* all of the outstanding shares of the Series 17 Preferred which are convertible into 1,666,667 shares of common stock; and
- \* various warrants for the purchase of up to 5,308,650 shares of common stock.

These estimates do not include the shares of common stock which may be issued to Capital Bank in payment of dividends accrued on the Series 17 Preferred.

If Capital Bank acquires an aggregate of 1,666,667 shares of common stock on conversion of the Series 17 Preferred and 5,308,650 shares of common stock upon the exercise of various warrants, Capital Bank will own approximately 16,948,231 shares of common stock (which includes the 9,972,914 shares of

common stock held by Capital Bank as of September 21, 2001), representing approximately 41.6% of our then outstanding common stock. These estimates do not include the shares of common stock which may be issued to Capital Bank in payment of dividends accrued on the Series 17 Preferred. The estimates further assume no other options or warrants are exercised, and we do not issue any other shares of common stock. We may not have sufficient remedies to avoid an actual change in control if Capital Bank seeks such a change in control.

If Capital Bank converts all of the shares of Series 17 Preferred and exercises all of the currently outstanding warrants that are held in its name and all of the other currently outstanding warrants and options are exercised, then Capital Bank would own approximately 32.0% of our issued and outstanding common stock. This estimate assumes we do not issue any other shares of our common stock. In this event, Capital Bank would still be our largest stockholder.

If Capital Bank acquires control of us by converting the Series 17 Preferred and exercising the outstanding warrants held by it, our operations and management could be greatly impacted. For instance, Capital Bank could have the ability to exercise significant or absolute influence over matters involving stockholder voting, including election of directors or the approval of a merger proposal. As a result, the ability of our stockholders (other than Capital Bank) to influence our management and policies could be reduced, and their ability to realize opportunities to sell some or all of their common stock at prices that represent a premium over market prices could be lost.

The rules of the Nasdaq SmallCap Market (the "Nasdaq") could deem such a change in control to be a change in financial structure or a merger or consolidation with Capital Bank. If so, Nasdaq could require us to requalify under the initial listing standards of Nasdaq to maintain the listing of our common stock on the Nasdaq. If we are required to

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requalify for listing on the Nasdaq, among other things, our common stock must have a minimum bid price of \$4.00 per share. The market price of the common stock as of the effective date of this prospectus is below \$4.00 and would not meet Nasdaq initial listing requirements.

**Our directors and officers own a significant percentage of our common stock. Their ownership could enable them to exercise significant control over corporate decisions.**

Prior to the conversion of the outstanding shares of our Series 17 Preferred or the exercise of any outstanding warrants and options, approximately 7.8% of the outstanding shares of common stock is held by our executive officers and directors as of September 21, 2001. Such persons have options or similar other rights to acquire approximately 452,645 shares, representing an additional 2.0% of our common stock. Assuming the options and warrants held by our executive officers and directors which are exercisable within 60 days of September 21, 2001, are exercised, the outstanding shares of Series 17 Preferred are not converted, and no other outstanding options or warrants are exercised, our executive officers and directors would beneficially own, as a group, approximately 9.8% of the outstanding shares of common stock.

**The growth of our business is primarily dependent upon our ability to successfully operate M&EC.**

In June 2001, we acquired East Tennessee Materials and Energy Corporation ("M&EC"), a mixed waste processing facility in Oak Ridge, Tennessee. Prior to the acquisition, we had loaned and advanced approximately \$12.1 million to M&EC for use in the operation and construction of M&EC's facility. At the closing of the M&EC acquisition, we advanced funds to M&EC to pay certain liabilities to the Internal Revenue Service, certain 401(k) plans, and several M&EC debt holders, in an aggregate amount of approximately \$2.0 million. In order to acquire M&EC and to finance the construction of M&EC's facility, we borrowed a substantial amount of funds. Because M&EC's facility is newly constructed, M&EC had no operating history prior to our acquisition of M&EC. There are no assurances that M&EC's operations will generate revenue sufficient for us to recoup the amounts loaned to M&EC and expended in the acquisition of M&EC. There are also no assurances that we will be able to effectively operate M&EC to achieve profitability. Consequently, the potential growth of our business will be limited and our business, results of operations, and financial condition would suffer a material adverse effect if we are unable to successfully operate M&EC.

Currently, M&EC's revenues are generated primarily pursuant to three subcontracts under contracts with the U. S. Department of Energy (the "DOE"). Each of these subcontracts provides that the DOE may terminate the contracts under which the subcontracts were issued on 30 days' notice. If we fail to



maintain, renew, or replace these contracts, M&EC's revenues will be materially reduced, and your investment will be materially and adversely affected.

**If we cannot maintain our government permits or cannot obtain any required permits, we may not be able to continue or expand our operations.**

Our business is subject to extensive, evolving, and increasingly stringent federal, state, and local environmental laws and regulations. Such federal, state, and local environmental laws and regulations govern our activities regarding the treatment, storage, recycling, disposal, and transportation of hazardous and non-hazardous waste and low-level radioactive waste. We must obtain and maintain permits, licenses and/or approvals to conduct such activities in compliance with such laws and regulations. Failure to obtain and maintain such permits, licenses and/or approvals would have a material adverse effect on our operations and financial condition. There can be no assurance that we will be able to maintain our currently held permits, licenses, and/or approvals or obtain any additional permits, licenses and/or approvals which may be required as we expand our operations.

**Our liquidity and profitability affects our ability to comply with governmental regulations.**

Because the environmental industry continues to develop rapidly, we cannot predict the extent to which our operations may be affected by future enforcement policies as applied to existing laws, by changes to current environmental laws and regulations, or by the enactment of new environmental laws and regulations. Any predictions regarding possible

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liability under such laws are complicated further by current environmental laws which provide that we could be liable, jointly and severally, for certain activities of third parties over whom we have limited or no control. The standards imposed by federal, state, and local permitting laws require us to incur certain levels of capital expenditures to maintain compliance with such standards.

Our inability to become profitable on a long-term basis could have a negative impact on our ability to remain in compliance with various federal, state, and local environmental regulations. Violation of such federal, state, and local regulations could result in the loss of one or more of our permits or subject us to substantial fines, penalties, or other liabilities that could have a material adverse impact on our business.

**As our operations expand, we may be subject to increased litigation.**

Our operations are regulated by numerous laws regarding procedures for waste treatment, storage, recycling, transportation, and disposal activities, all of which may provide the basis for litigation against us. In recent years, the waste treatment industry has experienced a significant increase in so-called "toxic-tort" litigation as those injured by contamination seek to recover for personal injuries or property damage. We believe that as our operations and activities expand, there will be a similar increase in the potential for litigation alleging that we are responsible for contamination or pollution caused by our normal operations, negligence or other misconduct, or for accidents which occur in the course of our business activities. Such litigation, if significant and not adequately insured against, could have a material adverse effect upon our operations and financial condition. Protracted litigation would likely cause us to spend significant amounts of our time, effort, and money. This could prevent our management from focusing on our operation and expansion, thereby resulting in a material adverse effect upon us.

**If we cannot maintain adequate insurance coverage, we will violate certain of our operating permits.**

Our business exposes us to various risks, including claims for causing damage to property and injuries to persons which may involve allegations of negligence or professional errors or omissions in the performance of our services. Such claims could be substantial. We believe that our insurance coverage is presently adequate and similar to, or greater than, the coverage maintained by other companies in the industry of our size. There can be no assurance that we will be able to obtain adequate or required insurance coverage in the future or, if obtainable, that such insurance will be available at affordable rates. If we cannot obtain or maintain such coverage, we would violate our permit conditions and other requirements of the environmental laws, rules, and regulations under which we operate, and we would be unable to continue certain of our operations. These events would have a material adverse effect on our operations and financial condition.

**Our operations will suffer if we are unable to manage our rapid growth.**

We are currently experiencing a period of rapid growth through internal expansion and strategic acquisitions. This growth has placed, and could continue to place, a significant strain on our management, personnel, and other resources. Our ability to grow effectively will require us to effectively manage our collaborative arrangements and to continue to improve our operational, management, and financial systems and controls, and to successfully train, motivate, and manage our employees. Management's inability to effectively control growth could have a material adverse effect on our operations and financial condition.

**If we are unable to develop and protect our proprietary technology, our growth could be limited.**

Our success is heavily dependent upon our ability to develop and market our proprietary technologies. There can be no assurance that the steps taken by us to protect our proprietary technologies will be adequate to prevent misappropriation of these technologies by third parties. Any such misappropriation could have a material adverse effect on our operations and financial condition. Changes to current environmental laws and regulations also could limit the use of our proprietary technology.

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**The loss of our key personnel could have a material adverse effect on our business.**

Our success depends on the contributions of our key management, environmental and engineering personnel, especially Dr. Louis F. Centofanti, Chairman, President, and Chief Executive Officer. The loss of Dr. Centofanti could have a material adverse effect on our operations, revenues, and prospects. Our future success depends on our ability to retain and expand our staff of qualified personnel, including environmental specialists and technicians, sales personnel, and engineers. There can be no assurance that we will be successful in our efforts to attract and retain such personnel as their availability is limited due to the rapid increase in the demand for hazardous waste management services and the highly competitive nature of the hazardous waste management industry. We do not maintain key person insurance on any of our employees, officers, or directors.

Our credit facility provides that a change of control will occur if Dr. Centofanti or Richard T. Kelecyc cease to serve as senior executive officers in substantially the same capacity as served on the date of the credit facility. Our credit facility also provides that a change of control results when the persons who are members of our Board on the closing of the credit facility cease to constitute 50% of our Board. Each of these events could be an event of default under the terms of the credit facility. The terms of the Purchase Agreement covering our Subordinated Notes provide that if Dr. Centofanti ceases to be our President and Chief Executive Officer, the holders of the Subordinated Notes have the option to require us to prepay all amounts owing under the Subordinated Notes. The Purchase Agreement covering the Subordinated Notes also provides that if any person or group, including Capital Bank, is successful in electing its nominees to 50% or more of the positions on our Board, the holders of the Subordinated Notes have the option to require us to prepay all amounts owing under the Subordinated Notes plus a prepayment premium.

**If environmental regulation or enforcement is relaxed, the demand for our services will decrease.**

The demand for our services is substantially dependent upon the public's concern with, and the continuation and proliferation of, the laws and regulations governing the treatment, storage, recycling, and disposal of hazardous, non-hazardous, and low-level radioactive waste. A decrease in the level of public concern, the repeal or modification of such laws, or any significant relaxation of regulations relating to the treatment, storage, recycling, and disposal of hazardous waste and low-level radioactive waste would significantly reduce the demand for our services and could have a material adverse effect on our operations and financial condition. We are not aware of any current federal or state government or agency efforts in which a moratorium or limitation has been, or will be, placed upon the creation of new hazardous waste regulations that would have a material adverse effect on us; however, no assurance can be made that such a moratorium or limitation will not be implemented in the future.

**We do not intend to pay dividends on our common stock in the foreseeable future.**

Since our inception, we have not paid cash dividends on our common stock, and we do not anticipate paying any cash dividends in the foreseeable future. We intend to retain future earnings, if any, to provide funds for the operation and/or expansion of our business.

The terms of the Series 17 Preferred allow us to pay dividends on the outstanding Series 17 Preferred in cash or common stock. We currently intend to pay the dividends accruing on the Series 17

Preferred in common stock if, and when, declared and paid by our Board of Directors. This prospectus includes up to 250,000 shares of common stock which may be issued as dividends on the Series 17 Preferred. The actual number of shares of common stock issuable in payment of such accrued dividends may be more or less depending upon, among other things, the length of time the Series 17 Preferred is outstanding and the price of the common stock at the time of payment of dividends. Our credit facility prohibits us from paying cash dividends on the Series 17 Preferred without the lender's prior written consent.

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**We may be unable to utilize loss carryforwards in the future.**

We have approximately \$13.8 million in net operating loss carryforwards which will expire from 2004 to 2020 if not used against future federal income tax liabilities. Our net loss carryforwards are subject to various limitations and have not been approved by the Internal Revenue Service. We anticipate the net loss carryforwards will be used to reduce the federal income tax payments which we would otherwise be required to make with respect to income, if any, generated in future years.

**Delaware law, certain of our charter provisions, and our stock option plans may inhibit a change of control under circumstances that could give you an opportunity to realize a premium over prevailing market prices.**

We are a Delaware corporation governed, in part, by the provisions of Section 203 of the General Corporation Law of Delaware, an anti-takeover law. In general, Section 203 prohibits a Delaware public corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business contribution is approved in a prescribed manner. As a result of Section 203, potential acquirers may be discouraged from attempting to effect acquisition transactions with us, thereby possibly depriving our security holders of certain opportunities to sell, or otherwise dispose of, such securities at above-market prices pursuant to such transactions. Further, our 1991 Performance Equity Plan, 1992 Outside Directors Stock Option Plan, and 1993 Nonqualified Stock Option Plan provide for the immediate acceleration of, and removal of restrictions from, options and other awards under such plans upon a "change of control" (as defined in the respective plans). Such provisions may also have the result of discouraging acquisition of us.

The issued and outstanding shares of Series 17 Preferred held by Capital Bank and the warrants held by Capital Bank could discourage other persons from attempting to acquire us. If Capital Bank acquires an aggregate of 1,666,667 additional shares of common stock upon conversion of the outstanding Series 17 Preferred and the 5,308,650 additional shares issuable upon the exercise of the warrants held by Capital Bank, Capital Bank will own approximately 16,948,231 or 41.6% of our outstanding common stock, which includes the 9,972,914 shares of common stock directly held by Capital Bank as of September 21, 2001, but does not include the shares of common stock which may be issuable in payment of dividends on the Series 17 Preferred. This percentage assumes that no shares of common stock are issued after September 21, 2001, other than to Capital Bank in connection with the conversion of the Series 17 Preferred and exercise of the warrants. In such event, Capital Bank will be our largest single stockholder and will have a significant number of shares of common stock within its control, and we may have insufficient remedies to avoid an actual change in control in favor of Capital Bank. The issued and outstanding shares of the Series 17 Preferred and the common stock held by Capital Bank could discourage other persons from attempting to acquire us even if Capital Bank does not obtain control.

**We currently do not have a sufficient number of shares of common stock available for issuance if all of our outstanding options and warrants are exercised and our outstanding preferred stock is converted. Consequently, if our stockholders do not approve an increase in the number of shares of our authorized common stock, we could be in default under our various obligations to issue common stock.**

Our Restated Certificate of Incorporation, as amended (the "Certificate"), presently authorizes 52 million shares of our capital stock, consisting of 50 million shares of common stock and 2 million shares of preferred stock. As of September 21, 2001, 33,763,177 shares of common stock were issued and outstanding, leaving 16,236,823 authorized shares (including 988,000 treasury shares) available for future issuance. However, if all of our currently exercisable warrants and options are exercised and our preferred stock is converted, we would be obligated to issue 19,260,418 shares of common stock, which is 3,023,595 shares more than would be available for issuance. To provide us with additional shares of authorized common stock, our Board will recommend that our stockholders approve an amendment to the Certificate to increase our authorized shares of common stock from 50 million to 75

million. Our Board expects that this proposal will be presented to our stockholders at a special meeting to be held before year's end. See "RECENT DEVELOPMENTS - Private Placement: Unit Warrants and Placement Agent Warrants."

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If the stockholders do not approve the amendment increasing the number of authorized shares of common stock, we may be unable to fulfill all of our potential obligations to issue shares of common stock. If we are unable to fulfill these obligations, it is possible that certain actions could be taken against us for losses and damages, which could have a material adverse effect on us.

**If our stockholders approve an increase in the number of shares of our common stock, such increase could be used by management to discourage corporate takeovers and could prevent stockholders from realizing a premium on their investment.**

The Board will recommend that our stockholders approve at a special meeting to be held prior to year's end an increase in its number of authorized shares of common stock from 50 million to 75 million. In addition to the need for additional shares to fulfill our current potential obligations to issue common stock, as discussed above, increasing the number of authorized shares of common stock is also necessary to provide us with the ability to issue common stock from time to time as needed for proper corporate purposes, such as:

- \* raising capital funds through private or public offerings;
- \* acquiring other companies;
- \* declaring stock splits or stock dividends; and
- \* issuing common stock under warrants, preferred stock, or other rights which may be granted by us from time to time in the future.

Such additional authorization of shares of common stock could be used by incumbent management to make more difficult, and thereby discourage, an attempt to acquire control of us, even though our stockholders may deem such an acquisition desirable. The issuance of new shares of common stock and/or preferred stock could also be used to dilute the stock ownership and voting power of a third party seeking to remove the directors, replace incumbent directors, accomplish certain business combinations alter, amend, or repeal portions of our Certificate or discourage or prohibit a takeover of us. See "RECENT DEVELOPMENTS - Private Placement: Unit Warrants and Placement Agent Warrants."

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### **SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS**

This prospectus contains forward-looking statements. All statements, other than statements of historical fact, in this prospectus are forward-looking statements, including statements regarding, among other things:

- \* our current objective to develop innovative technologies;
- \* our ability or inability to improve operations and become profitable on an annualized basis and continue our operations;
- \* our ability to develop and protect proprietary technologies in the conduct of our operations;
- \* our anticipated financial performance;
- \* our ability to utilize net operating loss carryforwards against future federal income tax liabilities;

- \* our ability to comply with our general working capital requirements;
- \* our ability to retain or receive certain permits or patents; and
- \* the adoption of moratoriums or limitations by federal or state governments regarding the creation of new hazardous waste regulations.

Although we believe our expectations reflected in those forward-looking statements are based on reasonable assumptions, we cannot assure you that these expectations will prove to be correct.

Important factors which could cause actual results and future outcomes to differ materially from those described in this prospectus include, but are not limited to, the following:

- \* general economic conditions;
- \* material reduction in revenues;
- \* inability to collect in a timely manner a material amount of receivables;
- \* increased competitive pressures;
- \* inability to maintain and obtain required permits and approvals to conduct operations;
- \* reduction in revenues and profitability of services provided by us due to increased competition;
- \* lack of resources to develop new technologies relating to the waste management business;
- \* future federal tax audit or audits which could reduce our loss carryforwards;
- \* limitations imposed by the Internal Revenue Code or our inability to utilize our loss carryforwards;
- \* inability to develop new and existing technologies in the conduct of operations or to develop such technologies for commercial use;
- \* changes in federal, state, and local laws and regulations, especially environmental regulations, or in the interpretation of such laws and regulations;
- \* management retention and development;
- \* inability to become profitable, and, if unable to become profitable, our inability to secure additional liquidity in the form of additional equity or debt;
- \* inability to maintain the listing of our common stock on the Nasdaq;
- \* cancellation of one or more subcontracts issued to M&EC in connection with government contracts;
- \* M&EC's lack of operating history; and
- \* the factors set forth under "Risk Factors" beginning on page 2 of this prospectus.

In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "would," "expect," "plan," "anticipate," "believe," "continue," or the derivative of these terms or other similar expressions. All forward-looking statements attributable to us or persons acting on our behalf are expressly qualified by the cautionary statements included in this prospectus. We undertake no obligation to update or revise our forward-looking statements, whether as a result of new information, future events or otherwise. In light of these risks, uncertainties and assumptions, the forward-looking events discussed in this prospectus might not occur.

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## RECENT DEVELOPMENTS

### Acquisition of East Tennessee Materials and Energy Corporation

On June 25, 2001, we completed the acquisition of M&EC, pursuant to the terms of the Stock Purchase Agreement, dated January 18, 2001, (the "Stock Purchase Agreement") with M&EC, all of the shareholders of M&EC, and Bill Hillis. Pursuant to the terms of the Stock Purchase Agreement, M&EC acquired 20% of the outstanding shares of voting stock of M&EC, and we acquired all of the remaining outstanding shares of M&EC voting stock (collectively, the "M&EC Acquisition"). As a result, we now own all of the issued and outstanding voting capital stock of M&EC.

We paid approximately \$2.4 million for the M&EC voting stock by issuing approximately 1.6 million shares of our common stock to the shareholders of M&EC, with each share of common stock having an agreed value of \$1.50, the closing price of the common stock as quoted on the Nasdaq on the date of the initial letter of intent relating to the M&EC Acquisition. As partial consideration of the M&EC Acquisition, M&EC issued shares of its newly created Series B Preferred Stock to shareholders of M&EC having a stated value of approximately \$1.3 million. The Series B Preferred Stock is non-voting and non-convertible and may be redeemed at the option of M&EC at any time after one year from the date of issuance for the price

of \$1.00 per share. Following the first 12 months after the original issuance of the Series B Preferred Stock, the holders of the Series B Preferred Stock will be entitled to receive, when, as, and if declared by the Board of Directors of M&EC out of legally available funds, dividends at the rate of 5% per year per share applied to the amount of \$1.00 per share, which shall be fully cumulative. As a condition to the closing of the M&EC Acquisition, we also issued approximately 347,000 shares of our common stock to certain creditors of M&EC in satisfaction of approximately \$520,000 of M&EC's liabilities.

Prior to the completion of the M&EC Acquisition, we operated under a subcontract agreement for the design and construction of M&EC's facility. As of the date of the M&EC Acquisition, we had loaned to M&EC approximately \$2.3 million for working capital purposes and had advanced approximately \$9.8 million related to the construction of the new facility. At the closing of the M&EC Acquisition, we advanced funds to M&EC to pay certain liabilities to the Internal Revenue Service, certain 401(k) plans, and several M&EC debt holders, in the aggregate amount of approximately \$2.0 million. The net cash used for the M&EC Acquisition and the cash advanced for construction and working capital to, and on behalf of, M&EC totaled approximately \$14.1 million.

M&EC recently completed the construction of its mixed waste treatment facility in Oak Ridge, Tennessee. The 125,000 square-foot facility, located on the grounds of the Oak Ridge K-25 Weapons Facility of the DOE, will treat waste coming from governmental, institutional, and commercial generators nationwide. M&EC operates under both a hazardous waste treatment and storage permit and a license to store and treat low-level radioactive waste. M&EC also has three subcontracts (the "Oak Ridge Contracts") with Bechtel-Jacobs Company, LLC, DOE's site manager, which were awarded in 1998. The facility began accepting waste in June 2001, and became fully operational in the third quarter of 2001.

The Oak Ridge Contracts are similar in nature to a blanket purchase order whereby the DOE specifies the approved waste treatment process and team to be used for certain disposal, but the DOE does not specify a schedule as to dates for disposal or quantities of disposal material to be processed. The initial term of the contract will represent a demonstration period for the team's successful treatment of the waste and the resulting ability of such processed waste to meet acceptance criteria for its ultimate disposal location.

As with most such blanket processing agreements, the Oak Ridge Contracts contain no minimum or maximum processing guarantees, and may be terminated by either party pursuant to standard DOE procurement regulation terms which provide, among other things, that they are terminable upon 30 days' notice. Each specific waste stream processed under the Oak Ridge Contracts will require a separate work order from DOE and will be priced separately with an intent of recognizing an acceptable profit margin.

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## **Note Warrants**

On July 31, 2001, we issued approximately \$5.6 million of our 13.50% Senior Subordinated Notes due July 31, 2006 (the "Subordinated Notes"). The Subordinated Notes were issued pursuant to the terms of a Note and Warrant Purchase Agreement, dated July 31, 2001 (the "Purchase Agreement"), between Associated Mezzanine Investors - PESI (I), L.P. ("AMI"), Bridge East Capital, L.P. ("BEC"), and us. The Subordinated Notes are unsecured and are unconditionally guaranteed by our subsidiaries. Our payment obligations under the Notes are subordinate to our payment obligations to our primary lender and to certain other of our debts up to an aggregate amount of \$25 million. The net proceeds from the sale of the Subordinated Notes were used to repay certain short-term loans.

Under the terms of the Purchase Agreement, we issued to AMI and BEC warrants to purchase up to 1,281,731 shares of our common stock at an initial exercise price of \$1.50 per share (the "Note Warrants"). The Note Warrants may be exercised at any time during a seven-year term and provide for cashless exercise. The number of shares issuable upon exercise of the Warrants is subject to adjustment pursuant to certain anti-dilution provisions.

The Note Warrants are exercisable at any time, from time to time, beginning July 31, 2001, until July 31, 2008 at an exercise price of \$1.50 per share of common stock. The Note Warrants may also be exercised at the option of the holder pursuant to a cashless exercise provision, which permits the holder to surrender the Note Warrants in exchange for the number of shares of common stock equal to the product of the number of shares of common stock designated to be exercised multiplied by a fraction, the numerator of which is the current market price of the common stock less \$1.50, the denominator of which is the current market price. The number of shares of common stock issuable upon exercise of the Note Warrants and the exercise price of the Note Warrants are subject to adjustment under certain circumstances summarized below.

If, at any time after July 31, 2001, we issue or sell additional shares of common stock (including certain option and convertible securities under which common stock may be issued) without consideration or for a consideration per share less than the market price of the common stock on the date of, and immediately prior to, such issue or sale, the exercise price of the Note Warrants will be reduced to a price determined by multiplying the exercise price by a fraction:

\* the numerator of which will be:

(a) the number of shares of common stock outstanding immediately prior to such issue or sale, plus

(b) the number of shares of common stock which the aggregate consideration received by us for the total number of such additional shares of common stock issued or sold would purchase at the then market price; and

\* the denominator of which will be the number of shares of common stock outstanding immediately after such issue or sale.

Upon an adjustment in the exercise price of the Note Warrants, the number of shares issuable upon exercise of the Note Warrants will be adjusted by multiplying the number of shares of common stock which would otherwise be issuable upon such exercise by a fraction:

\* the numerator of which is \$1.50; and

\* the denominator of which is the exercise price, as may be adjusted under the terms of the Note Warrants.

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If after July 31, 2001, we declare a dividend or other distribution on our common stock other than a dividend payable in common stock or options for common stock or a regular periodic dividend payable in cash and declared out of earned surplus of the Company, the exercise price in effect prior to the record date for such dividend will be reduced to a price determined by multiplying the exercise price by a fraction (a) the numerator of which will be the current market price on such record date less the value of the dividend or distribution applicable to one share of common stock; and (b) the denominator of which shall be the current market price.

The Note Warrants' anti-dilution terms further provide that, if after July 31, 2001, we:

\* consolidate with or merge into another person without being the continuing or surviving corporation; or

\* consolidate or merge with another person in which we are the continuing or surviving corporation but our common stock or other securities are exchanged for other securities of another person; or

\* we transfer all or substantially all of our properties; or

\* we effect a capital reorganization or reclassification of our common stock or other securities which are not subject to the anti-dilution provisions discussed above,

then the holders of the Note Warrants will be entitled to receive the amount of cash, securities or other property, which the holder would have been entitled to receive if holder had exercised the Note Warrants immediately prior to the transaction. An exception to the above sentence is if a purchase, tender, or exchange offer has been accepted by our stockholders and

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following such purchase, tender, or exchange offer, the maker thereof, together with its affiliates own more than 50% of our outstanding common stock, then holders of the Note Warrants have the option to receive the amount of cash, securities, or other property to which the holder would have been entitled, if the holder of the Note Warrants had exercised the Note Warrants prior to the expiration of such purchase, tender or exchange offer and accepted such offer, and all of the common stock held by such holder had purchased pursuant to such purchase, tender or exchange offer.

The Subordinated Notes and Note Warrants were sold pursuant to an exemption from registration under Section 4(2) of the Securities Act of 1933, as amended (the "Act"), and/or Rule 506 of Regulation D promulgated under the Act, and, therefore, were not registered under the Act. The holders of the Note Warrants have the right to demand registration of the shares of common stock issuable under the Note Warrants on two occasions and also have certain piggyback registration rights.

In connection with the sale of the Subordinated Notes, we entered into an Option Agreement, dated July 31, 2001, with AMI and BEC (the "Option Agreement"). Pursuant to the Option Agreement, we granted each purchaser of the Subordinated Notes an irrevocable option requiring us to purchase any or all of the Note Warrants or the shares of common stock issuable under the Note Warrants then held by the purchaser (the "Put Option"). The Put Option may be exercised at any time commencing July 31, 2004, and ending July 31, 2008. In addition, each purchaser granted us an irrevocable option to purchase all of the Note Warrants or the shares issued under the Note Warrants which are then held by the purchaser (the "Call Option"). The Call Option may be exercised at any time commencing July 31, 2005, and ending July 31, 2008. The purchase price under the Put Option and the Call Option is based on the quotient obtained by dividing (a) the sum of six times our consolidated EBITDA for the period of the 12 most recent consecutive months minus Net Debt plus the Warrant Proceeds by (b) our Diluted Shares (as the terms EBITDA, Net Debt, Warrant Proceeds, and Diluted Shares are defined in the Option Agreement).

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#### **Private Placement: Unit Warrants and Placement Agent Warrants**

On July 30, 2001, we completed a private placement offering of units (the "Private Placement") to accredited investors. Each unit is comprised of one share of our common stock and one warrant to purchase one share of common stock (a "Unit Warrant"). The purchase price for each unit was \$1.75, and the exercise price of each Unit Warrant is \$1.75, subject to adjustment under certain conditions. We accepted subscriptions for 4,397,566 of the maximum 4,400,000 units offered, for an aggregate purchase price of \$7,695,740.

Under the terms of the Private Placement, we had the right to appoint one or more placement agents (each, a "Placement Agent") to place the units as our agent and to assist in completing the Private Placement. We paid each Placement Agent a private placement fee equal to 7.5% of the aggregate purchase price for units placed by that particular Placement Agent. We also issued to each Placement Agent warrants to purchase up to the number of shares of common stock equal to 7% of the aggregate purchase price for units placed by that particular Placement Agent, divided by \$1.75 (the "Placement Agent Warrants"). The Placement Agent Warrants are for a term of five years and have an exercise price of \$1.75 per share. As a result, we paid the Placement Agents \$232,031 in total fees and issued to them Placement Agent Warrants for the purchase of up to an aggregate of 123,750 shares of common stock.

The Private Placement was sold only to accredited investors as that term is defined under Regulation D of the Act. One of the investors in the Private Placement was Capital Bank, which subscribed for 842,995 units under the Private Placement. Capital Bank may be considered a beneficial owner of more than 10% of our issued and outstanding common stock. Capital Bank directly owns, as agent for its investors, 9,972,914 shares of common stock, or 29.5% of our outstanding common stock as of September 21, 2001, and holds warrants and convertible preferred stock entitling it to purchase or receive up to an additional 6,975,317 shares of common stock. See "POTENTIAL CHANGE IN CONTROL" for a discussion of Capital Bank's ownership of our securities as agent for its various investors.

Under the original terms of the Private Placement, we offered to sell a maximum of 5,000,000 units. After the Private Placement commenced, however, the maximum number of units offered was reduced to 4,400,000 in order to comply with Rule 4350(i)(1)(D) of the rules of the National Association of Securities Dealers, Inc. Our common stock is listed for trading on the Nasdaq and the Boston Stock Exchange ("BSE"). Although the BSE approved the listing of the shares of common stock to be issued in connection with the Private Placement and upon the exercise of the Unit Warrants and the Placement Agent Warrants, the Nasdaq advised the Company that the Private Placement could violate Rule 4350(i)(1)(D) governing the listing of additional securities on the Nasdaq as originally structured.



Rule 4350(i)(1)(D) provides that a corporation may not, through a private offering such as the Private Placement, issue a number of shares of common stock equal to or greater than 20% of the corporation's outstanding common stock at a price less than the greater of book or market value of the common stock without first obtaining shareholder approval. At the time of the discussion with Nasdaq, we had approximately 22.5 million shares of common stock outstanding, and the Private Placement of up to 5 million units would result in up to 10 million shares being issued if the Unit Warrants were exercised, representing more than 30% of our then issued and outstanding common stock. For purposes of determining whether the Private Placement complies with Rule 4350 (i)(1)(D), the Nasdaq asserted that we must determine market value as of the date that each subscription agreement for units is executed by the investor and becomes binding and not April 6, 2001, the date the Private Placement commenced. Because the price of the common stock as reported on the Nasdaq rose from \$1.6875 per share on the date the Private Placement commenced to \$2.27 on the date the Private Placement terminated, numerous subscription agreements were executed at a time when the market value per share of common stock was greater than the \$1.75 purchase price per unit. The Nasdaq claimed that the subscription agreements executed on a date when the market price was greater than the \$1.75 unit purchase price represented sales at less than the greater of book or market value of the common stock, thereby violating Rule 4350(i)(1)(D).

In order to comply with Rule 4350(i)(1)(D), we agreed with Nasdaq to restructure the Private Placement so that (a) the maximum number of units offered was reduced from 5 million to 4.4 million, and (b) the Unit Warrants and the Placement

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Agent Warrants could not be exercisable until our stockholders approved the issuance of the shares of common stock upon the exercise of the Unit Warrants and the Placement Agent Warrants. Prior to the closing of the Private Placement, the Placement Agents and the initial investors who subscribed for units agreed to amend the terms of the Unit Warrants and the Placement Agent Warrants pursuant to our agreement with the Nasdaq. As a result of these modifications, only 4,397,566 shares of common stock, representing approximately 19.5% of the issued and outstanding shares of common stock as of the commencement of the Private Placement, have been issued under the Private Placement without stockholder approval.

We anticipate mailing to our stockholders during the fourth quarter of 2001 our proxy statement soliciting proxies for the special meeting of stockholders to be held prior to year end (the "Special Meeting"). At the Special Meeting, the stockholders entitled to vote will be asked to approve the issuance of the shares of common stock issuable upon the exercise of the Unit Warrants and the Placement Agent Warrants and increase the authorized number of shares of our common stock from 50 million to 75 million. Capital Bank has advised us that it will recommend to its investors that they allow Capital Bank to vote the shares of common stock held of record by Capital Bank for the approval of these proposals. The Unit Warrants and the Placement Agent Warrants do not provide a penalty if we are unable to obtain such stockholder approval. If we do not obtain such stockholder approval, we will not be obligated to issue shares pursuant to the exercise of the Unit Warrants or the Placement Agent Warrants. If the proposal is approved by the stockholders and if all Unit Warrants and Placement Agent Warrants are exercised, we would receive approximately \$7,912,000 in proceeds from such exercises. If the proposal is not approved, we will withdraw the shares of common stock issuable under the Unit Warrants and the Placement Agent Warrants from the registration statement containing this prospectus.

Each Unit Warrant and Placement Agent Warrant entitles the holder to purchase one share of common stock at an exercise price of \$1.75 per share, subject to the adjustments in certain cases described below. Each Unit Warrant and Placement Agent Warrant may be exercised at any time after stockholder approval of the issuance of common stock upon such exercise and prior to the expiration of the fifth anniversary of the date of issuance of the Unit Warrants and Placement Agent Warrants.

The exercise price and the number of shares of common stock issuable upon the exercise of the Unit Warrants and Placement Agent Warrants are subject to adjustment, from time to time, if we:

- \* common (a) pay a dividend in, or make a distribution of, shares of capital stock on our outstanding stock; (b) subdivide our outstanding shares of common stock into a greater number of shares; or
- (c) combine our outstanding shares of common stock into a smaller number of shares; and
- \* consolidate with, or merge into, another corporation (other than a consolidation or merger which

does not

result in any reclassification or change of the outstanding common stock).

Pursuant to the terms of the Private Placement, we are required to file a registration statement under the Act for the resale of the common stock issued in the Private Placement Offering and the common stock issuable upon the exercise of the Unit Warrants and the Placement Agent Warrants.

### **Series 17 Preferred**

We entered into a Conversion and Exchange Agreement with Capital Bank, dated May 25, 2001, but effective as of April 6, 2001, whereby Capital Bank converted a portion of our then-outstanding preferred stock owned of record by Capital Bank, as agent for certain of its accredited investors, for shares of our common stock and exchanged the remaining preferred stock held by Capital Bank for shares of our newly designated Series 17 Preferred. The issuance of the Series 17 Preferred under the terms of the Conversion and Exchange Agreement was made in a private placement under Section 4(2) and/or Regulation D of the Act.

Prior to the consummation of the Conversion and Exchange Agreement, Capital Bank owned of record, as its agent for certain of its accredited investors, 1,769 shares of our Series 14 Class N Convertible Preferred Stock (the "Series 14

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Preferred"), 616 shares of our Series 15 Class O Convertible Preferred Stock (the "Series 15 Preferred"), and 1,797 shares of our Series 16 Class P Convertible Preferred Stock (the "Series 16 Preferred"). Capital Bank converted 1,314 shares of Series 14 Preferred and 416 shares of Series 15 Preferred into an aggregate of 1,153,333 shares of our common stock. Capital Bank then exchanged the remaining shares of Series 14 Preferred, Series 15 Preferred, and Series 16 Preferred for a total of 2,500 shares of the Series 17 Preferred. As a result of the consummation of the Conversion and Exchange Agreement, no shares of Series 14 Preferred, Series 15 Preferred, or Series 16 Preferred remain outstanding.

The terms of the Series 17 Preferred include the following:

- \* The Series 17 Preferred may be converted into shares of common stock at any time at a conversion price of \$1.50 per share, subject to adjustment as set forth in the Certificate of Designations relating to the Series 17 Preferred.
- \* The Series 17 Preferred has a "stated value" of \$1,000 per share. We may, at our sole option, redeem, in whole or in part, at any time, and from time to time, the then-outstanding Series 17 Preferred at the following cash redemption prices if redeemed during the following periods: (a) within 12 months from June 1, 2001 - \$1,100 per share, and (b) after June 1, 2002 - \$1,200 per share. Upon any notice of redemption, Capital Bank will have five business days to exercise its conversion rights regarding the redeemed shares.
- \* Capital Bank is entitled to receive if, when, and as declared by our Board of Directors out of funds legally available, cumulative dividends at an annual dividend rate of 5% of the Liquidation Value for each share of the Series 17 Preferred then issued and outstanding as of the acceptable declaration of such dividend, payable semiannually within ten business days after each subsequent June 30<sup>th</sup> and December 31<sup>st</sup>. Dividends shall be payable in cash or shares of our common stock, at the Company's option. The Liquidation Value is \$1,000 per share, subject to adjustment.

If we merge or consolidate with another entity and we are not the survivor, or if we sell or convey all

or substantially all of our property, then the holder of each share of Series 17 Preferred will have the right to convert its shares into the kind and amount of shares or other property receivable upon such consolidation or merger as if the Series 17 Preferred had been converted immediately prior to the consolidation, merger, sale or transfer.

If we declare or pay any dividend or effect a subdivision of our common stock into a greater number of shares, or if the outstanding shares of common stock are combined or consolidated into a lesser number of shares, then the conversion price in effect immediately prior to the happening of such event will be proportionately increased or decreased.

If we effect a capital reorganization or reclassification of our common stock or other securities which are not subject to the anti-dilution provisions discussed above, then the conversion price will be proportionately adjusted so that the Series 17 Preferred will be convertible into a number of shares of common stock of such other class or classes of stock equivalent to the number of shares of common stock that would have been subject to receipt by the holder upon conversion of preferred stock immediately before that change.

If we sell any shares of common stock for a price less than the conversion price immediately in effect prior to such sale or any rights, warrants, or other securities entitling the holders thereof to convert such securities into common stock at a price per share less than the conversion price in effect on the date of such sale, then the conversion price will be adjusted as of the date of such sale to the amount per share received and to be received by us in connection with the sale, conversion and exercise. The holders of the Series 17 Preferred may waive their rights to any such adjustment. In addition, no adjustment is required in the case of stock options issued to employees.

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## **Exchange Agreement and Exchange Warrants**

On July 9, 2001, we entered into an agreement (the "Exchange Agreement") with Capital Bank to issue to Capital Bank, as agent for certain of its accredited investors, 1,893,505 shares of common stock and a warrant to purchase up to 1,839,405 shares of common stock at an exercise price of \$1.75 per share (the "Exchange Warrant") in satisfaction of all amounts due or to become due under the Loan Agreement, dated August 29, 2000, between us and Capital Bank (the "\$3 Million Loan") and a related Unsecured Promissory Note issued by us in favor of Capital Bank in the original principal amount of \$3,000,000 (the "\$3 Million Note"), including our obligations to issue to Capital Bank shares of common stock if the \$3 Million Note was not paid by certain due dates. The \$3 Million Note was due on July 1, 2001.

Upon the closing of the Exchange Agreement effective July 9, 2001, we paid to Capital Bank a closing fee of \$325,000, payable in \$75,000 cash and by issuing to Capital Bank 105,932 shares of common stock, such number of shares being equal to the quotient of \$250,000 divided by the last closing bid price of the common stock as quoted on the Nasdaq on June 26, 2001. In addition, for consulting services in connection with the Exchange Agreement, we issued to Herbert Strauss a five-year warrant for the purchase of up to 625,000 shares of common stock at a purchase price of \$1.75 per share (the "Capital Exchange Warrant"). The terms of the Exchange Warrant and the Capital Exchange Warrant are substantively similar.

The Exchange Warrant is exercisable at any time, from time to time, on or after July 9, 2001, and prior to July 9, 2006. If we propose to sell substantially all of our assets or merge or consolidate, or effect a merger or consolidation in which we are not the survivor, and the consideration to be received by us or our shareholders consists solely of cash, then the Exchange Warrant will terminate unless exercised by the effective date of the sale or merger transaction. If the consideration to be received by us or our shareholders consists, in whole or in part, of consideration other than cash, the holder of the Exchange Warrant will have the right thereafter to purchase the kind and amount of the shares and other securities and property which would have been owned or entitled to be received after such sale or merger transaction had the Exchange Warrant been exercised immediately prior to such transaction.

The exercise price and the number of shares of common stock issuable upon exercise of the Exchange Warrant are subject to adjustment, from time to time, if we:

\* declare and pay a dividend in shares of common stock or make a distribution, without receipt of consideration, in shares of common stock to holders of our outstanding common stock,

- \* subdivide our outstanding shares of common stock,
- \* combine our outstanding shares of common stock into a smaller number of shares of common stock, or
- \* issue any shares of our capital stock in reclassification of our common stock for the number of shares of common stock issuable upon exercise of the Exchange Warrant.

Upon any such transaction, the Exchange Warrant will be adjusted so that the holder of the Exchange Warrant will be entitled to receive the kind and number of shares of common stock or of our other securities which the holder would have owned or been entitled to receive had the Exchange Warrant been exercised in advance of such transaction.

The holder of the Exchange Warrant will be entitled to purchase the number of shares of common stock or other securities, resulting from such adjustment at an exercise price per share of common stock or other security determined by:

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- \* multiplying the exercise price in effect immediately prior to such adjustment by the number of shares of common stock purchasable pursuant to the Exchange Warrant immediately prior to such adjustment, divided by,
- \* the number of shares of common stock or other securities resulting from such adjustment.

The issuance of the common stock, the Exchange Warrant and the Capital Exchange Warrant under the terms of the Exchange Agreement was made pursuant to Section 4(2) and/or Rule 506 under Regulation D promulgated under the Act. Capital Bank has advised us that it is precluded by Austrian law from disclosing the identities of its investors, but that all of its investors are accredited investors under Rule 501 of Regulation D promulgated under the Act. In addition, Capital Bank has advised the Company that none of its investors beneficially own more than 4.9% of common stock. See "POTENTIAL CHANGE OF CONTROL" for a discussion of Capital Bank's holdings of our securities.

## **BHC Warrants**

On January 31, 2001, we entered into a definitive loan agreement with BHC Interim Funding, L.P. ("BHC"), pursuant to which BHC loaned us \$6 million (the "BHC Loan"). The BHC Loan was payable on March 31, 2002, with interest payable monthly on the outstanding principal balance of the BHC Loan at the annual rate of \$13.75%. We repaid the BHC Loan in full on July 31, 2001. Pursuant to the terms of the BHC Loan, we issued to BHC certain warrants (the "BHC Warrants") for the purchase of up to 817,142 shares of common stock at an initial exercise price of \$1.4578 per share.

The BHC Warrants allow the holder to exercise the BHC Warrant without paying the exercise price in cash. Upon a cashless exercise, the holder will receive the number of shares of common stock equal to:

- \* the number of shares as to which the BHC Warrants are being exercised, minus
- \* the number of shares having an aggregate fair market value equal to the product of (a) the exercise price multiplied by (b) the number of shares as to which the BHC Warrants are being exercised.

The exercise price and the number of shares of common stock issuable upon exercise of the BHC Warrants are subject to adjustment, from time to time, upon the occurrence of any of the following events. If we issue shares of common stock for a price per share less than the exercise price in effect before such issuance, the exercise price will be reduced to a price determined by multiplying the exercise price by a fraction having:

- \* the numerator equal to the total number of common stock shares outstanding plus the number of shares of common stock which the aggregate consideration received by us would purchase at such exercise

price; and

- \* the denominator equal to the total number of shares of common stock outstanding immediately after such issuance.

These adjustments will not be made as a result of the grant or exercise of rights or options under our existing stock purchase and stock option plans or under our warrants which were outstanding on January 1, 2001.

If we issue options or rights to subscribe for shares of common stock, or any securities convertible into or exchangeable for shares of common stock, for a price less than the exercise price, the exercise price in effect immediately prior to such issuance will be reduced to a price computed by the above-listed method. If we subdivide, combine, or pay a dividend in shares of common stock outstanding, the exercise price and number of shares issuable upon exercise of the

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BHC Warrants will be proportionately decreased, or increased, as appropriate. If the exercise price is adjusted, the number of shares of common stock issuable upon the exercise of the BHC Warrant will be equal to:

- \* the product of: (a) the number of shares of common stock issuable upon the exercise of the BHC Warrant immediately prior to such adjustment, and (b) the exercise price immediately prior to such adjustment, divided by
- \* the exercise price immediately after such adjustment.

The exercise price and the number of shares of common stock issuable upon exercise of the BHC Warrants are subject to adjustment, from time to time, if we:

- \* reorganize or reclassify the outstanding shares of common stock;
- \* merge or consolidate with another corporation; or
- \* sell, lease or convey all, or substantially all, of our property, assets, business and goodwill to another entity.

Upon any such transaction, the BHC Warrant will be adjusted so that the holder of the BHC Warrant will be entitled to receive the kind and number of shares of common stock or of our other securities which the holder would have owned or been entitled to receive had the BHC Warrant been exercised in advance of such transaction.

If we make a distribution of assets or securities to our stockholders, prior to the expiration of the BHC Warrant and prior to the exercise of the BHC Warrant, the holder of the BHC Warrant will be entitled, upon the exercise, to receive, in addition to the common stock it is entitled to receive, the same kind and amount of assets or securities as would have been distributed to it in a distribution had it been the holder of record of shares of common stock receivable upon exercise of the BHC Warrant on the record date for determination of those entitled to receive the distribution.

If we dissolve, liquidate, or wind up our affairs at any time prior to the expiration or exercise of the BHC Warrant, the holder of the BHC Warrant will be entitled to receive, in lieu of our common stock, the same kind and amount of assets as would have been issued, distributed or paid to it upon the exercise of the BHC Warrant on the record date for the determination of those entitled to receive any such liquidating distribution.

The holder of the BHC Warrants may, at any time and from time to time during the term of the BHC Warrants, request the registration of the BHC Warrant and common stock issuable upon the exercise of the BHC Warrants. In addition, the holder of the BHC Warrants is entitled, subject to certain conditions, to include the BHC Warrant and common stock issuable upon the exercise of the BHC Warrant in a registration statement covering other securities which the Registrant proposes to register.

## **Appointment of New Director**

On September 20, 2001, our Board appointed Mr. Jack Lahav as a member of the Board. Mr. Lahav is a private investor specializing in launching and growing businesses. Mr. Lahav is the founder and president of Remarkable Products, Inc. He also co-founded Lamar Signal Processing, Inc., a telecommunications company. Mr. Lahav currently serves as president of Advanced Technologies, Inc., a robotics company, and director of Vocaltech Communications, Inc. Mr. Lahav acquired 571,429 shares of common stock and warrants to purchase up to 571,429 shares of common stock in the Private Placement. These 1,142,858 shares are being offered under the prospectus. See "SELLING STOCKHOLDERS." Mr. Lahav is 53 years old and resides at 18 Chelsea Drive, Livingston, New Jersey 07039.

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## **POTENTIAL CHANGE IN CONTROL**

As of September 21, 2001, Capital Bank owned of record, as agent for certain accredited investors, 9,972,914 shares of common stock representing 29.5% of our issued and outstanding common stock. Capital Bank also has the right to acquire an additional 6,975,317 shares of common stock, comprised of (a) 842,995 shares issuable upon exercise of the Unit Warrants purchased in the Private Placement by Capital Bank as agent for certain investors; (b) 4,465,655 shares of common stock issuable under various other warrants held by Capital Bank; and (c) 1,666,667 shares of common stock issuable to Capital Bank upon the conversion of 2,500 shares of Series 17 Preferred held by Capital Bank. If Capital Bank were to acquire all of the shares of common stock issuable upon exercise of the various warrants held by Capital Bank (including the Unit Warrants issued to Capital Bank under the Private Placement) and the shares of common stock issuable upon conversion of the Series 17 Preferred, then Capital Bank would own of record 16,948,231 shares of common stock, representing 41.6% of the issued and outstanding common stock. The foregoing estimates assume that we do not issue any other shares of common stock; no other warrants or options are exercised; we do not acquire additional shares of common stock as treasury stock; and Capital Bank does not dispose of any shares of common stock.

If Capital Bank were to acquire the shares of common stock as described in the previous paragraph, Capital Bank would be our largest single shareholder, and we may not be able to avoid an actual change in control if Capital Bank seeks such a change in control. Moreover, if such conversion and exercise results in Capital Bank acquiring more than 50% of our then-outstanding common stock, we would not be able to avoid a change in control.

If Capital Bank acquires the shares of common stock described in the previous paragraph, Capital Bank may be able to cause a change in at least 50% of the members of our Board of Directors. Such a change in Board membership could be an event of default under our \$22 million credit facility (the "Credit Facility") and our \$5.6 million outstanding Subordinated Notes. If Capital Bank were to acquire such shares and cause Dr. Louis Centofanti to be removed from our Board of Directors or as our president and chief executive officer, the removal could be an event of default under the Credit Facility and the Subordinated Notes.

Capital Bank may have become a beneficial owner (as that term is defined under Rule 13d-3 as promulgated under the Exchange Act of 1934, as amended (the "Exchange Act")) of more than 10% of our common stock on February 9, 1996, as a result of its acquisition of 1,100 shares of Series 1 Class A Convertible Preferred Stock ("Series 1 Preferred") that were convertible into a maximum of 1,282,798 shares of common stock commencing 45 days after issuance of the Series 1 Preferred. If Capital Bank became a beneficial owner of more than 10% of our common stock on February 9, 1996, and was required to file reports under Section 16(a), Capital Bank has not filed with the Securities and Exchange Commission and the Company, among other reports, any Forms 3, 4 or 5 for years 1996 through the date of this registration statement, although it has entered into numerous transactions regarding the Company's equity securities.

Capital Bank has advised us that it is a banking institution regulated by the banking regulations of Austria which holds shares of our common stock on behalf of numerous investors. Capital Bank asserts that it is precluded by Austrian law from disclosing the identities of its investors, but that all of its investors are accredited investors under Rule 501 of Regulation D promulgated under the Act. In addition, Capital Bank has advised us that none of its investors beneficially own more than 4.9% of our common stock. Capital Bank has further informed us that its clients (and not Capital Bank) maintain full voting and dispositive power over such shares. Consequently, Capital Bank has advised us that it believes it is not the

beneficial owner, as such term is defined in Rule 13d-3, of the shares of our common stock registered in the name of Capital Bank because it has neither voting nor investment power, as such terms are defined in Rule 13d-3, over such shares. Capital Bank has informed us that it does not believe that it is required to file reports under Section 16(a) or to file either Schedule 13D or Schedule 13G in connection with the shares of our common stock registered in the name of Capital Bank.

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## **USE OF PROCEEDS**

We will not receive any part of the proceeds of the sale of Shares. We will receive approximately \$21,789,000 if the Selling Stockholders exercise, for cash, all of the warrants covering Shares included in this prospectus. Any proceeds received by us from the exercise of such warrants, less our share of the estimated expenses of the cost of this offering, will be used by us for general corporate purposes.

We have agreed to pay all costs and fees relating to the registration of the common stock covered by this prospectus, except for any discounts, concessions, or commissions payable to underwriters, dealers, or agents incident to the offering of the Shares covered by this prospectus, or any legal fees incurred by any Selling Stockholders relating to this offering.

## **SUMMARY OF SECURITIES BEING OFFERED**

The 21,619,722 Shares covered by this prospectus are comprised of the following:

- \* 1,666,667 shares issuable upon the conversion of our Series 17 Preferred;
- \* 250,000 shares issued or issuable in payment of accrued dividends on the Series 17 Preferred;
- \* 1,281,731 shares issuable upon the exercise of the Note Warrants;
- \* 1,999,437 shares issued pursuant to the Exchange Agreement;
- \* 1,839,405 shares issuable upon the exercise of the Exchange Warrant;
- \* 625,000 shares issuable upon the exercise of the Capital Exchange Warrant;
- \* 4,397,566 shares issued pursuant to our Private Placement;
- \* 4,397,566 shares issuable upon the exercise of the Unit Warrants;
- \* 123,750 shares issuable upon the exercise of the Placement Agent Warrants;
- \* 817,142 shares issuable upon the exercise of the BHC Warrants;
- \* 1,020,000 shares issuable upon the exercise of the Capital Warrants (described below);
- \* 610,000 shares issuable upon the exercise of the National Warrants (described below); and
- \* 2,591,458 shares issuable upon the exercise of the Consultant Warrants (described below).

All of the foregoing shares of common stock and warrants are previously described under "RECENT DEVELOPMENTS," except the Capital Warrants, the National Warrants, and the Consultant Warrants, which are described below.

### **Capital Warrants**

In connection with the \$3 Million Loan and a separate loan from Capital Bank to us for \$750,000, dated July 12, 2000 (the "\$750,000 Loan"), we issued to Capital Bank three-year warrants for the right to purchase an aggregate 300,000 shares of our common stock. Pursuant to an amendment to both the \$3 million Loan and the \$750,000 Loan, we issued additional three year warrants for the right to purchase up to an aggregate 720,000 shares of common stock. These warrants include the following (collectively, the

- of       \* a warrant, dated August 29, 2000, for the purchase of up to 150,000 shares at an exercise price of \$1.50;
- price   \* a warrant, dated October 30, 2000, for the purchase of up to 150,000 shares at an exercise price of \$1.625;
- price   \* a warrant, dated November 29, 2000, for the purchase of up to 300,000 shares at an exercise price of \$1.875;
- price of \* a warrant, dated December 29, 2000, for the purchase of up to 105,000 shares at an exercise price of \$1.4219;
- of       \* a warrant, dated January 31, 2001, for the purchase of up to 105,000 shares at an exercise price of \$1.9688;
- price of \* a warrant, dated February 28, 2001, for the purchase of up to 105,000 shares at an exercise price of \$1.9375; and
- of       \* a warrant, dated March 30, 2001, for the purchase of up to 105,000 shares at an exercise price of \$1.8125.

The terms of the Capital Warrants provide that the holder may exercise a Capital Warrant without paying the exercise price in cash. Upon a cashless exercise, the holder will receive the number of shares equal to the product of (a) the number of warrant shares as to which the warrant is being exercised, multiplied by (b) a fraction, the numerator of which is the market price of our common stock minus the exercise price, and the denominator is the market price.

If we declare and pay a dividend in common stock or if the outstanding shares of common stock are subdivided, combined or consolidated, then the number of shares issuable upon the exercise of the Capital Warrant or the exercise price will be proportionately increased or decreased, as appropriate. Further, if we merge or consolidate with another entity and we are not the surviving entity, or if we sell or convey all or substantially all of our property, the holder of a Capital Warrant may receive, upon its exercise, the kind and number of shares of common stock or of our other securities which the holder would have owned or been entitled to receive had the Capital Warrant been exercised in advance of such transaction.

### **Consulting and Advisory Agreement: National Warrants**

On December 5, 2000, we entered into a financial advisory and consulting agreement (the "Advisory and Consulting Agreement") with National Securities Corporation ("National"). Pursuant to the terms of the Advisory and Consulting Agreement, National performed various financial advisory services for the Company, including disseminating information to the investment community at large; advising the Company about its financial structure as it relates to the public market for its securities; and advising us as to the timing and structure of any future public or private offerings of equity securities. Pursuant to the terms of the Advisory and Consulting Agreement, we issued to National two warrants (collectively, the "National Warrants"), consisting of (a) a warrant, dated June 1, 2001, for the purchase of up to 250,000 shares of common stock and exercisable for a period of five years at an exercise price of \$1.50 per share, and (b) a warrant, dated June 1, 2001, for the purchase of up to 360,000 shares of common stock and exercisable for a period of five years at an exercise price of \$1.75 per share.

The terms of the National Warrants provide that the holder has certain piggyback registration rights and that the holder may exercise a National Warrant without paying the exercise price in cash. Upon a cashless exercise, the holder will receive the number of shares equal to the product of (a) the number of shares of common stock as to which the National



Warrant is being exercised, multiplied by (b) a fraction, the numerator of which is the market price of our common stock minus the exercise price, and the denominator is the market price.

If we declare and pay a dividend in common stock into a greater number of shares, or if the outstanding shares of common stock are subdivided, combined or consolidated, then the number of shares issuable upon the exercise of the National Warrant or the exercise price will be proportionately increased or decreased, as appropriate.

If we merge or consolidate with another entity and we are not the surviving entity, or if we sell or convey all or substantially all of our property, the holder of a National Warrant may receive, upon its exercise, the kind and number of shares of common stock or of our other securities which the holder would have owned or been entitled to receive had the National Warrant been exercised in advance of such transaction.

### **Consultant Warrants**

We have issued an aggregate of 2,591,458 warrants to purchase common stock (collectively, the "Consultant Warrants") in connection with retaining and compensating Larkspur Capital Corporation ("Larkspur"), Ryan, Beck & Co., LLC ("Ryan, Beck"), and Strategic Growth International, Inc. ("Strategic") for consulting and advisory services rendered to us. These consulting services related to the negotiation and completion of our \$22 million credit facility, the BHC Loan, and the Purchase Agreement covering our Subordinated Notes. A portion of the Consultant Warrants issued to Larkspur and Ryan Beck were assigned by Larkspur and Ryan Beck to certain officers and/or managing partners of Larkspur and Ryan Beck or trusts controlled by such officer or managing partner. Except as noted below, each of these warrants are for a term of five years with an exercise price of \$1.44 per share.

In connection with retaining the services of Larkspur, Ryan, Beck, and Strategic, we issued warrants to purchase an aggregate of 630,000 shares of common stock, consisting of (a) warrants issued to each of Larkspur and Ryan, Beck, dated January 25, 2000, for the purchase of up to 75,000 shares and (b) warrants issued to Strategic, dated April 1, 2001, for the purchase of up to 480,000 shares. The warrants granted to Strategic have an exercise price of \$1.20 per share as to 240,000 shares and \$1.40 per share as to 240,000 shares.

In connection with the negotiation and completion of our \$22 million credit facility, we issued warrants for the purchase of an aggregate of 1,283,332 shares of common stock, consisting of (a) warrants issued to each of Larkspur and Ryan, Beck, dated December 22, 2000, for the purchase of up to 534,722 shares, and (b) warrants issued to Strategic, dated December 22, 2000, for the purchase of up to 213,888 shares.

In connection with the negotiation and completion of the BHC Loan, we issued warrants for the purchase of an aggregate of 349,999 shares of common stock, consisting of (a) warrants issued to each of Larkspur and Ryan, Beck, dated January 31, 2001, for the purchase of up to 85,069 shares, (b) warrants issued to Strategic dated February 1, 2001, for the purchase of up to 34,028 shares, (c) warrants issued to each of Larkspur and Ryan, Beck, dated March 9, 2001, for the purchase of up to 60,764 shares, and (d) warrants issued to Strategic, dated March 9, 2001, for the purchase of up to 24,305 shares.

In connection with the negotiation and completion of the Purchase Agreement and our Subordinated Notes, we issued warrants for the purchases of up to an aggregate of 328,127 shares of common stock consisting of (a) warrants issued to each of Larkspur and Ryan Beck, dated July 31, 2001, for the purchase of up to 136,720 shares, and (b) warrants issued to Strategic, dated July 31, 2001, for the purchase of up to 54,687 shares.

The terms of the Consultant Warrants provide that the holder may exercise a Consultant Warrant without paying the exercise price in cash. Upon a cashless exercise, the holder will receive the number of shares equal to the product of (a) the number of warrant shares as to which the warrant is being exercised, multiplied by (b) a fraction, the numerator of which is the market price of our common stock minus the exercise price, and the denominator is the market price.

proportionately increased or decreased, as appropriate, if we subdivide or combine our common stock, or pay a dividend in common stock. When the exercise price is adjusted, the number of shares issuable upon exercise will also be adjusted multiplying a number equal to the exercise price in effect immediately prior to such adjustment by the number of shares issuable upon exercise of the Consultant Warrants immediately prior to such adjustment and dividing the product by the adjusted exercise price.

## SELLING STOCKHOLDERS

The following table sets forth as to each Selling Stockholder: (a) the name of each Selling Stockholder, (b) the amount of shares beneficially owned as of the date of this prospectus, (c) the number of shares of common stock owned by each Selling Stockholder which are included under this prospectus, (d) the number of shares beneficially owned after the offering, assuming that all shares of common stock being offered hereby are sold and that such are outstanding, and (e) the percentage of common stock beneficially owned after completion of the offering. Unless otherwise noted, each Selling Stockholder has sole voting and investment power over the shares of common stock listed as beneficially owned by the Selling Stockholder.

The common stock being offered includes shares of common stock which may be acquired upon: (a) the exercise of outstanding warrants, whether such are currently exercisable, and/or (b) conversion of outstanding shares of preferred stock, whether or not such are currently convertible.

The percentage of common stock beneficially owned after completion of this offering assumes: (a) all shares of common stock covered by this prospectus are sold, (b) the Selling Stockholder does not acquire beneficial ownership of additional shares of common stock after the date of this prospectus, and (c) we do not issue any additional shares of common stock after the date of this prospectus, except the shares of common stock which a person has the right to acquire upon the exercise of warrants and conversion of preferred stock outstanding as of the date of this prospectus, but such shares are not determined to be outstanding for the purpose of computing the percentage ownership of any other person. The amounts indicated are based on outstanding common stock of 33,763,177 shares as of September 21, 2001.

<u>Selling Stockholder</u>	<u>Common Stock Beneficially Owned Prior to Offering</u>	<u>Common Stock Being Offered</u>	<u>Common Stock Beneficially Owned After Offering</u>	
			<u>Number</u>	<u>% of Class</u>
Associated Mezzanine-PESI(I), L.P.	712,073 <sup>(1)</sup>	712,073	0	*
David Avital	286,000 <sup>(2)+</sup>	286,000 <sup>+</sup>	0	*
BHC Interim Funding, L.P.	817,142 <sup>(3)</sup>	817,142	0	*
Bridge East Capital, L.P.	569,658 <sup>(4)</sup>	569,658	0	*
Capital Bank-Grawe Gruppe AG	17,185,730 <sup>(5)+</sup>	8,461,499 <sup>+</sup>	8,724,231	41.9%
CICI 1999 Qualified Annuity	171,430 <sup>(6)+</sup>	171,430 <sup>+</sup>	0	*
Gerald B. Cramer	171,430 <sup>(7)+</sup>	171,430 <sup>+</sup>	0	*
CRM 1999 Enterprise Fund 3	400,000 <sup>(8)+</sup>	400,000 <sup>+</sup>	0	*
Paul Cronson	282,146 <sup>(9)</sup>	282,146	0	*
Craig S. Eckenthal	114,286 <sup>(10)+</sup>	114,286 <sup>+</sup>	0	*

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<u>Selling Stockholder</u>	<u>Common Stock Beneficially Owned Prior to Offering</u>	<u>Common Stock Being Offered</u>	<u>Common Stock Beneficially Owned After Offering</u>	
			<u>Number</u>	<u>% of Class</u>

Danny Ellis Living Trust	700,000 <sup>(11)+</sup>	500,000 <sup>+</sup>	200,000	*
Europa International, Inc.	1,142,856 <sup>(12)+</sup>	1,142,856 <sup>+</sup>	0	*
Harvey Gelfenbein	57,142 <sup>(13)+</sup>	57,142 <sup>+</sup>	0	*
Christopher Todd Goodwin Trust	3,000 <sup>(14)</sup>	3,000	0	*
Kelsey Ann Goodwin Trust	3,000 <sup>(15)</sup>	3,000	0	*
Robert L. Goodwin	276,146 <sup>(16)</sup>	276,146	0	*
A.C. Israel Enterprises	571,430 <sup>(17)+</sup>	571,430 <sup>+</sup>	0	*
Kennerman Associates	15,750 <sup>(18)+</sup>	15,750 <sup>+</sup>	0	*
Michael J. Kollender	245,375 <sup>(19)</sup>	245,375	0	*
Kuekenhof Partners, L.P.	80,000 <sup>(20)+</sup>	80,000 <sup>+</sup>	0	*
Kuekenhof Equity Fund, L.P.	120,000 <sup>(21)+</sup>	120,000 <sup>+</sup>	0	*
Jack Lahav <sup>(22)</sup>	1,142,858 <sup>(22)+</sup>	1,142,858 <sup>+</sup>	0	*
Joseph LaMotta	57,142 <sup>(23)+</sup>	57,142 <sup>+</sup>	0	*
Jay B. Langner	57,142 <sup>(24)+</sup>	57,142 <sup>+</sup>	0	*
Larkspur Capital Corporation	34,000 <sup>(25)+</sup>	34,000 <sup>+</sup>	0	*
The F. M. Grandchildren Trust	85,714 <sup>(26)+</sup>	85,714 <sup>+</sup>	0	*
Mathers Associates	457,142 <sup>(27)+</sup>	457,142 <sup>+</sup>	0	*
Robert C. Mayer, Jr.	282,146 <sup>(28)</sup>	282,146	0	*
Peter Melhado	230,000 <sup>(29)+</sup>	230,000 <sup>+</sup>	0	*
Meera Murdeshwar	45,837 <sup>(30)</sup>	45,837	0	*
National Securities Corporation	650,000 <sup>(31)+</sup>	650,000 <sup>+</sup>	0	*
Pamela Equities Corp.	85,714 <sup>(32)+</sup>	85,714 <sup>+</sup>	0	*
Josef Paradis	286,000 <sup>(33)+</sup>	286,000 <sup>+</sup>	0	*
Readington Associates	114,286 <sup>(34)+</sup>	114,286 <sup>+</sup>	0	*
Dr. Ralph Richart	450,000 <sup>(35)+</sup>	450,000 <sup>+</sup>	0	*
Randy F. Rock	245,375 <sup>(36)</sup>	245,375	0	*
Edward J. Rosenthal Profit Sharing Plan	57,142 <sup>(37)+</sup>	57,142 <sup>+</sup>	0	*
Ryan Beck & Co., LLC	435,525 <sup>(38)+</sup>	435,525 <sup>+</sup>	0	*
Yariv Sapir IRA	171,428 <sup>(39)+</sup>	171,428 <sup>+</sup>	0	*

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<u>Selling Stockholder</u>	<u>Common Stock Beneficially Owned Prior to Offering</u>	<u>Common Stock Being Offered</u>	<u>Common Stock Beneficially Owned After Offering</u>	
			<u>Number</u>	<u>% of Class</u>
Strategic Growth International, Inc.	806,908 <sup>(40)</sup>	806,908	0	*
Herbert Strauss	625,000 <sup>(41)</sup>	625,000	0	*
Bruce Wrobel	300,000 <sup>(42)+</sup>	300,000 <sup>+</sup>	0	*

\* Less than 1%.

+ Assumes that our stockholders approve the issuance of shares of common stock upon the exercise of the Unit Warrants and the Placement Agent Warrants. See "RECENT DEVELOPMENTS - Private Placement: Unit Warrants and Placement Agent Warrants."

- (1) Includes 712,073 shares issuable upon the exercise of warrants.
- (2) Includes 143,000 shares issuable upon the exercise of Unit Warrants.
- (3) Includes 817,142 shares issuable upon the exercise of warrants.
- (4) Includes 569,658 shares issuable upon the exercise of warrants.
- (5) Includes (a) 9,972,914 shares that Capital Bank owns of record; (b) 1,666,667 shares issuable upon conversion of 2,500 shares of Series 17 Preferred; (c) 842,995 shares issuable upon exercise of the Unit Warrants; (d) 4,465,655 shares issuable upon exercise of other warrants held by Capital Bank; and (e) 250,000 shares that Capital Bank may receive in payment of accrued dividends on the Series 17 Preferred (of which 12,501 shares have been previously issued). Our Registration Statement on Form S-3, No. 333-14513, effective October 21, 1996, and our Registration Statement on Form S-3, No. 333-87437, effective September 20, 1999, currently cover the reoffer and resale of up to 8,724,231 of the 17,185,730 shares noted as beneficially owned by Capital Bank. Capital Bank has informed us that it is a banking institution regulated by the banking regulations of Austria which holds our securities on behalf of numerous clients, and that the clients (and not Capital Bank) maintain full voting and dispositive power over such shares. Consequently, Capital Bank advised us that it believes it is not the beneficial owner, as such term is defined in Rule 13d-3 under the Exchange Act, of our securities registered in the name of Capital Bank because it has neither voting nor investment power, as such terms are defined in Rule 13d-3, over such securities. As a result, Capital Bank may share voting and investment power with its investors. Capital Bank has informed us that it does not believe that it is required to file reports under Section 16(a), Schedule 13D, or Schedule 13G in connection with the shares of our common stock registered in the name of Capital Bank. See "POTENTIAL CHANGE IN CONTROL" for a discussion of Capital Bank's holdings of our securities.

- (6) Includes 85,715 shares issuable upon the exercise of Unit Warrants.
- (7) Includes 85,715 shares issuable upon the exercise of Unit Warrants.
- (8) Includes 200,000 shares issuable upon the exercise of Unit Warrants.
- (9) Includes 282,146 shares issuable upon the exercise of warrants.
- (10) Includes 57,143 shares issuable upon the exercise of Unit Warrants.

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- (11) Includes 250,000 shares issuable upon the exercise of Unit Warrants and 100,000 owned of record by D.W. Investments, Inc. of which Mr. Ellis is the sole stockholder.
- (12) Includes 571,428 shares issuable upon the exercise of Unit Warrants.
- (13) Includes 28,571 shares issuable upon the exercise of Unit Warrants.

- (14) Includes 3,000 shares issuable upon the exercise of warrants.
- (15) Includes 3,000 shares issuable upon the exercise of warrants.
- (16) Includes 276,146 shares issuable upon the exercise of warrants.
- (17) Includes 285,715 shares issuable upon the exercise of Unit Warrants.
- (18) Includes 15,750 shares issuable upon the exercise of Placement Agent Warrants.
- (19) Includes 245,375 shares issuable upon the exercise of warrants.
- (20) Includes 40,000 shares issuable upon the exercise of Unit Warrants.
- (21) Includes 60,000 shares issuable upon the exercise of Unit Warrants.
- (22) Includes 571,429 shares issuable upon the exercise of Unit Warrants. Mr. Lahav was appointed as a member of the Board on September 20, 2001. See "RECENT DEVELOPMENTS - Appointment of New Director."
- (23) Includes 28,571 shares issuable upon the exercise of Unit Warrants.
- (24) Includes 28,571 shares issuable upon the exercise of Unit Warrants.
- (25) Includes 34,000 shares issuable upon the exercise of Placement Agent Warrants.
- (26) Includes 42,857 shares issuable upon the exercise of Unit Warrants.
- (27) Includes 228,571 shares issuable upon the exercise of Unit Warrants.
- (28) Includes 282,146 shares issuable upon the exercise of warrants.
- (29) Includes 115,000 shares issuable upon the exercise of Unit Warrants.
- (30) Includes 45,837 shares issuable upon the exercise of warrants.
- (31) Includes 650,000 shares issuable upon the exercise of Unit Warrants.
- (32) Includes 42,857 shares issuable upon the exercise of Unit Warrants.
- (33) Includes 143,000 shares issuable upon the exercise of Unit Warrants.
- (34) Includes 57,143 shares issuable upon the exercise of Unit Warrants.
- (35) Includes 225,000 shares issuable upon the exercise of Unit Warrants.
- (36) Includes 245,375 shares issuable upon the exercise of warrants.
- (37) Includes 28,571 shares issuable upon the exercise of Unit Warrants.
- (38) Includes 401,525 shares issuable upon the exercise of warrants and 34,000 shares issuable upon the exercise of Placement Agent Warrants.
- (39) Includes 85,714 shares issuable upon the exercise of warrants.
- (40) Includes 806,908 shares issuable upon the exercise of warrants.
- (41) Includes 625,000 shares issuable upon the exercise of warrants.

(42) Includes 150,000 shares issuable upon the exercise of warrants.

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## **PLAN OF DISTRIBUTION**

The Shares may be offered and sold from time to time by the Selling Stockholders, or by pledges, donees, transferees or other successors in interest. The Selling Stockholders will act independently of us in making decisions with respect to the timing, market, or otherwise at prices related to the then current market price or in negotiated transactions. The Shares may be sold by the Selling Stockholders in one or more transactions on the Nasdaq and the BSE or otherwise at market prices then prevailing or in privately negotiated transactions. The Shares may be sold by one or more of the following:

- \* ordinary brokerage transactions and transactions in which the broker solicits purchasers;
- \* purchases and resale by a broker-dealer for its account pursuant to this prospectus; and
- \* a block trade in which the broker-dealer so engaged will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction.

We have not been advised by the Selling Stockholders that they have, as of the date hereof, made any arrangements relating to the distribution of the Shares covered by this prospectus, except that certain of the Selling Stockholders are broker-dealers. See "SELLING STOCKHOLDERS." In effecting sales, broker-dealers engaged by the Selling Stockholders may arrange for other broker-dealers to participate, and, in such case, broker-dealers will receive commissions or discounts from the Selling Stockholders in amounts to be negotiated immediately prior to sale.

In offering the Shares, the Selling Stockholders and any broker-dealers and any other participating broker-dealers who execute sales for the Selling Stockholders may be deemed to be "underwriters" within the meaning of the Act in connection with such sales. Accordingly, any profits realized by the Selling Stockholders and the compensation of such broker-dealer may be deemed to be underwriting discounts and commissions. Any Shares covered by this prospectus which qualify for sale pursuant to Rule 144 may be sold under Rule 144 rather than pursuant to this prospectus.

## **LEGAL OPINION**

Certain legal matters in connection with the Common Stock offered hereby will be passed upon for the Company by Conner & Winters, A Professional Corporation, Oklahoma City, Oklahoma ("Conner & Winters"). Irwin H. Steinhorn, a stockholder of Conner & Winters, has an individual retirement account which owns 385 shares of common stock.

## **EXPERTS**

The financial statements and schedule incorporated by reference in this prospectus have been audited by BDO Seidman LLP, independent certified public accountants to the extent and for the periods set forth in their report incorporated herein by reference, and are included herein in reliance upon such report given upon the authority of said firm as experts in auditing and accounting.

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## **WHERE YOU CAN FIND MORE INFORMATION**

We file annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document we file at the SEC's public reference room at 450 Fifth Street, N.W., Washington, D.C., 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public

reference room. Our SEC filings are also available to the public on the SEC's web site at <http://www.sec.gov>.

The SEC allows us to "incorporate by reference" the information we file with it. This allows us to disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus. The information incorporated by reference is considered to be part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act until the selling stockholders sell all the shares.

- \* Our annual report on Form 10-K for the fiscal year ended December 31, 2000;
- \* Our quarterly reports on Form 10-Q for the quarter ended March 31, 2001, filed on May 14, 2001, and for the quarter ended June 30, 2001, filed on August 20, 2001;
- \* Our current reports on Form 8-K filed on April 6, 2001, May 14, 2001, July 5, 2001, July 20, 2001, and August 7, 2001, and the amendment to the current report on Form 8-K/A, filed September 10, 2001; and
- \* Our definitive proxy statement filed on April 30, 2001, pursuant to Section 14 of the Exchange Act in connection with our 2001 Annual Meeting of Stockholders.

You can request a copy of these filings, at no cost, by writing or telephoning us at the following address and telephone number:

Perma-Fix Environmental Services, Inc.  
Attention: Richard T. Kelecy  
1940 Northwest 67<sup>th</sup> Place  
Gainesville, Florida 32653  
Telephone (352) 373-4200

You should rely only on the information contained in this prospectus or any supplement and in the documents incorporated by reference. We have not authorized anyone else to provide you with different information. The selling stockholders will not make an offer of these shares in any state where the offer is not permitted. You should not assume that the information in this prospectus or any supplement or in the documents incorporated by reference is accurate on any date other than the date on the front of those documents.

This prospectus is part of a registration statement we filed with the SEC (Registration No. 333-\_\_\_\_\_). That registration statement and the exhibits filed along with the registration statement contain more information about the shares sold by the selling stockholders. Because information about contracts referred to in this prospectus is not always complete, you should read the full contracts which are filed as exhibits to the registration statement. You may read and copy the full registration statement and its exhibits at the SEC's public reference rooms or their web site.

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**PermaFix**  
environmental services

**21,619,722 Shares**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**

**Common Stock**

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## Prospectus

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\_\_\_\_\_, 2001

No dealer, salesman or other person has been authorized to give any information not contained in this prospectus and, if given or made, such information or representations must not be relied upon as having been authorized by us. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any of the securities offered hereby in any jurisdiction to any person to whom it is unlawful to make such offer in such jurisdiction. Neither the delivery of this prospectus nor any sale hereunder shall under any circumstances create any implication that there has been no change in our affairs since the date hereof.

### PART II INFORMATION NOT REQUIRED IN PROSPECTUS

#### Item 14. *Other Expenses of Issuance and Distribution*

##### Nature of Expense

	SEC Registration	\$	14,539.26
Fee		\$	35,000.00
	Legal Fees (Including	\$	2,000.00
Blue Sky)		\$	2,500.00
	Accounting Fees and	\$	<u>2,500.00</u>
Expenses	Printing	\$	54,539.00
	Miscellaneous		
	Total		

The foregoing expenses, except for the registration fee, are estimated pursuant to Item 511 of Regulation S-K.

#### Item 15. *Indemnification of Officers and Directors*

Section 145 of the Delaware Corporation Law provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation in related capacities against amounts paid and expenses incurred in connection with an action or proceeding to which he is or is threatened to be made a party by reason of such position,



if such person shall have acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal proceeding, if such person had no reasonable cause to believe his conduct was unlawful; provided that, no indemnification shall be made with respect to any matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the adjudicating court determines that, despite the adjudication of liability but in view of all the circumstance of the case, such person is fairly and reasonably entitled to indemnification.

Article EIGHTH of our Restated Certificate of Incorporation, as amended, provides as follows with respect to the indemnification of our officers and directors:

All persons who the Corporation is empowered to indemnify pursuant to the provisions of Section 145 of the General Corporation Law of the State of Delaware (or any similar provision or provisions of applicable law at the time in effect), shall be indemnified by the Corporation to the full extent permitted thereby. The foregoing right of indemnification shall not be deemed to be exclusive of any other rights to which those seeking indemnification may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors, or otherwise. No repeal or amendment of this Article EIGHTH shall adversely affect any rights of any person pursuant to this Article EIGHTH which existed at the time of such repeal or amendment with respect to acts or omissions occurring prior to such repeal or amendment.

Our Restated Certificate of Incorporation, as amended, provides that no director shall be personally liable to us or its stockholders for any monetary damages for breaches of fiduciary duty as a director, provided that this provision shall not eliminate or limit the liability of a director (i) for any breach of the director's duty of loyalty to us or our stockholders; (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law; (iii) under Section 174 of the General Corporation Law of the State of Delaware; or (iv) for any transaction from which the director derived an improper personal benefit.

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### Item 16. *Exhibits*

<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>
2.1	Stock Purchase Agreement, dated January 18, 2001, among the Registrant; East Tennessee Materials and Energy Corporation; Performance Development Corporation; Joe W. Anderson; Ronald W. Anderson; M. Joy Anderson; Russell R. and Cindy E. Anderson; Charitable Remainder Unitrust of William Paul Cowell, Kevin Cowell, Trustee; Joe B. and Angela H. Fincher; Ken-Ten Partners; Michael W. Light; Management Technologies, Incorporated; M&EC 401(k) Plan and Trust; PDC 401(k) Plan and Trust; Robert N. Parker; James C. Powers; Richard William Schenk, Trustee of the Richard Schenk Trust dated November 5, 1998; Talahi Partners; Hillis Enterprises, Inc.; Tom Price and Virginia Price; Thomas John Abraham, Jr. and Donna Ferguson Abraham; and Bill J. Hillis, is incorporated by reference from Exhibit 2.1 to the Registrant's Current Report on Form 8-K, dated January 31, 2001, and filed on February 26, 2001.
4.1	Certificate of Designations of Series 17 Class Q Convertible Preferred Stock, dated May 25, 2001, as incorporated by reference from Exhibit 99.1 to the Registrant's Current Report on Form 8-K dated June 15, 2001, and filed on July 5, 2001.
4.2	Specimen copy of Certificate relating to the Series 17 Class Q Convertible Preferred Stock, as incorporated by reference from Exhibit 4.4 to our Current Report on Form 8-K dated June 15, 2001, and filed on July 5, 2001.
4.3	Form of Subscription Agreement, as incorporated by reference from Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated June 15, 2001, and filed on July 5, 2001.
5.1	Opinion of Conner & Winters, a Professional Corporation.
10.1	Basic Oak Ridge Agreement between East Tennessee Materials and Energy Corporation and Bechtel Jacobs Company, LLC, No. 1GB-99446V, dated June 23, 1998, as incorporated by reference from Exhibit 10.1 to the Registrant's Form 10-Q for the quarter ended September 30, 1998, and filed on November 16, 1998.
10.2	Basic Oak Ridge Agreement between East Tennessee Materials and Energy Corporation

and Bechtel Jacobs Company, LLC, No. 1GB-99447V, dated June 23, 1998, as incorporated by reference from Exhibit 10.2 to the Registrant's Form 10-Q for the quarter ended September 30, 1998, and filed on November 16, 1998

- 10.3 Basic Oak Ridge Agreement between East Tennessee Materials and Energy Corporation and Bechtel Jacobs Company, LLC, No. 1GB-99448V, dated June 23, 1998, as incorporated by reference from Exhibit 10.3 to the Registrant's Form 10-Q for the quarter ended September 30, 1998, and filed on November 16, 1998.
- 10.4 Note and Warrant Purchase Agreement, dated July 31, 2001, among the Registrant, Associated Mezzanine Investors-PESI (I), L.P. and Bridge East Capital L.P., as incorporated by reference from Exhibit 99.1 to the Registrant's Current Report on Form 8-K dated July 30, 2001, and filed on August 7, 2001.
- 10.5 Form of 13.50% Senior Subordinated Note Due 2006, as incorporated by reference from Exhibit 99.2 to the Registrant's Current Report on Form 8-K dated July 30, 2001, and filed on August 7, 2001.
- 10.6 Option Agreement, dated July 31, 2001, among the Registrant, Associated Mezzanine Investors-PESI (I), L.P. and Bridge East Capital L.P., as incorporated by reference from Exhibit 99.8 to the Registrant's Current Report on Form 8-K dated July 30, 2001, and filed on August 7, 2001.
- 10.7 Financial Advisory and Consulting Agreement, dated December 5, 2000, between the Registrant and National Securities Corporation.

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**Exhibit  
No.**

**Description**

- 10.8 Debt-For-Stock Exchange Agreement, dated effective July 9, 2001, between the Registrant and Capital Bank-Grawe Gruppe AG, as incorporated by reference from Exhibit 10.1 to the Registrant's Current Report on Form 8-K dated July 9, 2001, and filed on July 20, 2001.
- 10.9 Warrant, dated January 31, 2001, granted by the Registrant to BHC Interim Funding, L.P. for the right to purchase up to 817,142 shares of the Registrant's common stock at an exercise price of \$1.4578, as incorporated by reference from Exhibit 99.6 to the Registrant's Current Report on Form 8-K, dated January 31, 2001, and filed on February 26, 2001.
- 10.10 Common Stock Purchase Warrant, dated August 29, 2000, granted by the Registrant to Capital Bank-Grawe Gruppe AG (f/k/a RBB Bank Aktiengesellschaft) for the right to purchase up to 150,000 shares of the Registrant's common stock at an exercise price of \$1.50 per share, as incorporated by reference from Exhibit 4.3 to the Registrant's Current Report on Form 8-K, dated August 31, 2000, and filed on September 5, 2000.
- 10.11 Warrant, dated November 29, 2000, granted by the Registrant to Capital Bank (f/k/a RBB Bank Aktiengesellschaft) for the right to purchase up to 300,000 shares of the Registrant's common stock at an exercise price of \$1.8750, as incorporated by reference from Exhibit 99.5 to the Registrant's Current Report on Form 8-K, dated December 22, 2000, and filed on January 17, 2001. Substantially similar warrants for the purchase of an aggregate 570,000 shares were issued to Capital Bank as follows: (a) a warrant, dated October 30, 2000, for the right to purchase up to 150,000 shares at an exercise price of \$1.625; (b) a warrant, dated December 29, 2000, for the right to purchase up to 105,000 shares at an exercise price of \$1.4219, (c) a warrant, dated January 31, 2001, for the right to purchase up to 105,000 shares at an exercise price of \$1.9688, (d) a warrant, dated February 28, 2001, for the right to purchase up to 105,000 shares at an exercise price of \$1.9375, and (e) a warrant, dated March 30, 2001, for the right to purchase up to 105,000 shares at an exercise price of \$1.8125. Copies of these Warrants will be provided to the Commission upon request.
- 10.12 Common Stock Purchase Warrant, dated July 9, 2001, granted by the Registrant to Capital Bank-Grawe Gruppe AG for the right to purchase up to 1,839,405 shares of the Registrant's common stock at an exercise price of \$1.75 per share.
- 10.13 Common Stock Purchase Warrant, dated July 9, 2001, granted by the Registrant to Herbert Strauss for the right to purchase up to 625,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share.
- 10.14 Common Stock Purchase Warrant, dated June 1, 2001, granted by the Registrant to National Securities Corporation for the right to purchase of up to 250,000 shares of the Registrant's common stock at an exercise price of \$1.50 per share. A substantially similar

warrant, dated June 1, 2001, was granted by the Registrant to National Securities Corporation for the purchase of up to 360,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share. A copy of this Warrant will be provided to the Commission upon request.

- 10.15 Common Stock Purchase Warrant, dated April 1, 1999, granted by the Registrant to Strategic Growth International, Inc. for the right to purchase up to 240,000 shares of the Registrant's common stock at an exercise price of \$1.20 per share. Substantially similar warrants for the purchase of an aggregate 566,908 shares were issued to Strategic Growth International, Inc. as follows: (a) a warrant, dated April 1, 1999 for the right to purchase up to 240,000 shares at an exercise price of \$1.40, (b) a warrant, dated December 22, 2000, for the right to purchase up to 213,888 shares at an exercise price of \$1.44, (c) a warrant, dated February 1, 2001, for the right to purchase up to 34,028 shares at an exercise price of \$1.44, (d) a warrant, dated March 9, 2001, for the right to purchase up to 24,305 shares at an exercise price of \$1.44, and (e) a warrant, dated July 31, 2001, for the right to purchase up to 54,687 shares at an exercise price of \$1.44. Copies will be provided to the Commission upon request.

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<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>
10.16	Warrant Agreement, dated January 25, 2000, granted by the Registrant to Ryan, Beck & Co., L.L.C. ("Ryan Beck") for the purchase of up to 33,750 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrant Agreements, dated January 25, 2000, for the right to purchase up to an aggregate 116,250 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Randy Rock (20,625 shares), Michael Kollender (20,625 shares), Robert Goodwin (20,000 shares), Robert C. Mayer, Jr. (23,000 shares), Paul Cronson (23,000 shares), Meera Murdeshwar (6,000 shares), Kelsey Ann Goodwin Trust (1,500 shares), and Christopher Todd Goodwin Trust (1,500 shares). Copies will be provided to the Commission upon request.
10.17	Warrant, dated December 22, 2000, issued by the Registrant to Ryan, Beck & Co., LLC for the purchase of 213,889 shares of the Registrant's common stock, as incorporated by reference from Exhibit 99.6 to the Registrant's Current Report on Form 8-K dated January 31, 2001, and filed on February 26, 2001. Substantially similar Warrants, dated December 22, 2000, for the right to purchase up to an aggregate 855,555 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (26,737 shares), Michael Kollender (147,048 shares), Randy Rock (147,048 shares), Robert Goodwin (166,907 shares), Robert C. Mayer, Jr. (169,908 shares), Paul Cronson (169,907 shares), Meera Murdeshwar (25,000 shares), Kelsey Ann Goodwin Trust (1,500 shares), and Christopher Todd Goodwin Trust (1,500 shares). Copies will be provided to the Commission upon request.
10.18	Warrant Agreement, dated January 31, 2001, granted by the Registrant to Ryan, Beck & Co., LLC for the right to purchase up to 34,028 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrants, dated January 31, 2001, for the right to purchase up to an aggregate 136,110 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (4,253 shares), Michael Kollender (23,394 shares), Randy Rock (23,394 shares), Robert Goodwin (26,690 shares), Robert C. Mayer, Jr. (26,689 shares), Paul Cronson (26,690 shares), and Meera Murdeshwar (5,000 shares). Copies will be provided to the Commission upon request.
10.19	Warrant Agreement, dated March 9, 2001, granted by the Registrant to Ryan, Beck & Co., LLC for the right to purchase up to 24,306 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrants, dated March 9, 2001, for the right to purchase up to an aggregate 97,222 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (3,038 shares), Michael Kollender (16,710 shares), Randy Rock (16,710 shares), Robert Goodwin (19,255 shares), Robert C. Mayer, Jr. (19,255 shares), Paul Cronson (19,254 shares), and Meera Murdeshwar (3,000 shares). Copies will be provided to the Commission upon request.
10.20	Warrant Agreement, dated July 31, 2001, granted by the Registrant to Paul Cronson for the right to purchase up to 43,295 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrants, dated July 31, 2001, for the right to

purchase up to an aggregate 218,752 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (6,836 shares), Ryan Beck (54,688), Michael Kollender (37,598 shares), Randy Rock (37,598 shares), Robert Goodwin (43,294 shares), Robert C. Mayer, Jr. (43,294 shares), and Meera Murdeshwar (6,837 shares). Copies will be provided to the Commission upon request.

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<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>
10.21	Warrant to Purchase Common Stock, dated July 30, 2001, granted by the Registrant to David Avital for the purchase of up to 143,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share. Substantially similar warrants for the purchase of an aggregate 4,254,566 were issued to Capital Bank (842,995 shares), CICI 1999 Qualified Annuity Trust (85,715 shares), Gerald D. Cramer (85,715 shares), CRM 1999 Enterprise Fund 3 (200,000 shares), Craig S. Eckenthal (57,143 shares), Danny Ellis Living Trust (250,000 shares), Europa International, Inc. (571,428 shares), Harvey Gelfenbein (28,571 shares), A. C. Israel Enterprises (285,715 shares), Kuekenhof Partners, L.P. (40,000), Kuekenhof Equity Fund, L.P. (60,000 shares), Jack Lahav (571,429 shares), Joseph LaMotta (28,571 shares), Jay B. Langner (28,571 shares), The F. M. Grandchildren Trust (42,857 shares), Mathers Associates (228,571 shares), Peter Melhado (115,000 shares), Pamela Equities Corp. (42,857 shares), Josef Paradis (143,000 shares), Readington Associates (57,143 shares), Dr. Ralph Richart (225,000 shares), Edward J. Rosenthal Profit Sharing Plan (28,571 shares), Yariv Sapir IRA (85,714 shares), and Bruce Wrobel (150,000 shares), respectively. Copies will be provided to the Commission upon request.
10.22	Common Stock Purchase Warrant, dated July 30, 2001, granted by the Registrant to Kennerman Associates for the purchase of 15,750 shares of the Registrant's common stock at an exercise price of \$1.75 per share. Substantially similar warrants, dated July 30, 2001, for the purchase of an aggregate 108,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share were issued to Ryan, Beck & Co., L.L.C. (34,000 shares), Larkspur Capital Corporation (34,000 shares), and National Securities Corporation (40,000 shares). Copies will be provided to the Commission upon request.
10.23	Common Stock Purchase Warrant, dated July 31, 2001, granted by the Registrant to Associated Mezzanine Investors-PESI (I), L.P. for the purchase of up to 712,073 shares of the Registrant's common stock at an exercise price of \$1.50 per share. A substantially similar warrant was issued to Bridge East Capital L.P. for the right to purchase of up to 569,658 shares of the Registrant's common stock, and a copy will be provided to the Commission upon request.
23.1	Consent of BDO Seidman, LLP.
23.2	Consent of Conner & Winters, as contained in Exhibit 5.1 hereto and incorporated herein by reference.
24.1	Powers of Attorney for Messrs. Zwecker, Colin, Sullivan, and Lahav, as contained in the Power of Attorney of the signature page included in this Registration Statement.

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#### Item 17. *Undertakings*

The Company hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to the Registration Statement:

(i) To include any prospectus required by Section 10(a)(3) of the Act;

individually  
Registration  
Statement;

(ii) To reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, or in the aggregate, represent a fundamental change in the information set forth in the Registration Statement;

Registration  
Statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement;

included  
furnished  
Act of

Provided, however, that paragraphs (1)(i) and (1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Company pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that are incorporated by reference in this Registration Statement.

shall be  
offering of such  
securities at the time shall be deemed to be the initial bona fide offering thereof.

(2) That, for the purpose of determining any liability under the Act, each post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at the time shall be deemed to be the initial bona fide offering thereof.

being registered  
which remain unsold at the termination of the offering.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

The Company hereby undertakes that, for purposes of determining any liability under the Act, each filing of the Company's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at the time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Act may be permitted to directors, officers and controlling persons of the Company pursuant to the indemnification provisions described herein, or otherwise, the Company has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Company of expenses incurred or paid by a director, officer or controlling person of the Company in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Company will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

#### SIGNATURES FOR FORM S-3

Pursuant to the requirements of the Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Gainesville, State of Florida, on the 28th day of September, 2001.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By: /s/ Louis Centofanti  
Chairman, President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS that each person whose signature appears below hereby constitutes and appoints Dr. Louis F. Centofanti as his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do them in person, hereby ratifying and confirming all that said attorney-in-fact and agent or any of them, or their or his substitute or substitutes, shall do or cause to be done by virtue hereof.

Pursuant to the requirements of the Act, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Louis Centofanti</u> Dr. Louis F. Centofanti	Chairman of the Board of Directors, President, and Chief Executive Officer (Principal Executive Officer)	September 28, 2001
<u>/s/ Richard T. Kelecy</u> Richard T. Kelecy	Chief Financial Officer (Principal Financial and Accounting Officer)	September 28, 2001
<u>/s/ Mark A. Zwecker</u> Mark A. Zwecker	Director	September 28, 2001
<u>/s/ Jon Colin</u> Jon Colin	Director	September 28, 2001
<u>/s/ Thomas P. Sullivan</u> Thomas P. Sullivan	Director	September 28, 2001
<u>/s/ Jack Lahav</u> Jack Lahav	Director	September 28, 2001

Exhibit Index

<u>Exhibit No.</u>	<u>Description</u>	<u>Sequential Page No.</u>
2.1	Stock Purchase Agreement, dated January 18, 2001, among the Registrant; East Tennessee Materials and Energy Corporation; Performance Development Corporation; Joe W. Anderson; Ronald W. Anderson; M. Joy Anderson; Russell R. and Cindy E. Anderson; Charitable Remainder Unitrust	

of William Paul Cowell, Kevin Cowell, Trustee; Joe B. and Angela H. Fincher; Ken-Ten Partners; Michael W. Light; Management Technologies, Incorporated; M&EC 401(k) Plan and Trust; PDC 401(k) Plan and Trust; Robert N. Parker; James C. Powers; Richard William Schenk, Trustee of the Richard Schenk Trust dated November 5, 1998; Talahi Partners; Hillis Enterprises, Inc.; Tom Price and Virginia Price; Thomas John Abraham, Jr. and Donna Ferguson Abraham; and Bill J. Hillis, is incorporated by reference from Exhibit 2.1 to the Registrant's Current Report on Form 8-K, dated January 31, 2001, and filed on February 26, 2001.

- 4.1 Certificate of Designations of Series 17 Class Q Convertible Preferred Stock, dated May 25, 2001, as incorporated by reference from Exhibit 99.1 to the Registrant's Current Report on Form 8-K dated June 15, 2001, and filed on July 5, 2001.
- 4.2 Specimen copy of Certificate relating to the Series 17 Class Q Convertible Preferred Stock, as incorporated by reference from Exhibit 4.4 to our Current Report on Form 8-K dated June 15, 2001, and filed on July 5, 2001.
- 4.3 Form of Subscription Agreement, as incorporated by reference from Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated June 15, 2001, and filed on July 5, 2001.
- 5.1 Opinion of Conner & Winters, a Professional Corporation. 43
- 10.1 Basic Oak Ridge Agreement between East Tennessee Materials and Energy Corporation and Bechtel Jacobs Company, LLC, No. 1GB-99446V, dated June 23, 1998, as incorporated by reference from Exhibit 10.1 to the Registrant's Form 10-Q for the quarter ended September 30, 1998, and filed on November 16, 1998.
- 10.2 Basic Oak Ridge Agreement between East Tennessee Materials and Energy Corporation and Bechtel Jacobs Company, LLC, No. 1GB-99447V, dated June 23, 1998, as incorporated by reference from Exhibit 10.2 to the Registrant's Form 10-Q for the quarter ended September 30, 1998, and filed on November 16, 1998.
- 10.3 Basic Oak Ridge Agreement between East Tennessee Materials and Energy Corporation and Bechtel Jacobs Company, LLC, No. 1GB-99448V, dated June 23, 1998, as incorporated by reference from Exhibit 10.3 to the Registrant's Form 10-Q for the quarter ended September 30, 1998, and filed on November 16, 1998.

<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>	<b><u>Sequential Page No.</u></b>
10.4	Note and Warrant Purchase Agreement, dated July 31, 2001, among the Registrant, Associated Mezzanine Investors-PESI (I), L.P. and Bridge East Capital L.P., as incorporated by reference from Exhibit 99.1 to the Registrant's Current Report on Form 8-K dated July 30, 2001, and filed on August 7, 2001.	
10.5	Form of 13.50% Senior Subordinated Note Due 2006, as incorporated by reference from Exhibit 99.2 to the Registrant's Current Report on Form 8-K dated July 30, 2001, and filed on August 7, 2001.	
10.6	Option Agreement, dated July 31, 2001, among the Registrant, Associated Mezzanine Investors-PESI (I), L.P. and Bridge East Capital L.P., as incorporated by reference from Exhibit 99.8 to the Registrant's Current Report on Form 8-K dated July 30, 2001, and filed on August 7, 2001.	
10.7	Financial Advisory and Consulting Agreement, dated December 5, 2000, between the Registrant and National Securities Corporation.	
10.8	Debt-For-Stock Exchange Agreement, dated effective July 9, 2001, between the Registrant and Capital Bank-Grawe Gruppe AG, as incorporated by reference from Exhibit 10.1 to the Registrant's Current Report on Form 8-K dated July 9, 2001, and filed on July 20, 2001.	
10.9	Warrant, dated January 31, 2001, granted by the Registrant to BHC Interim	

Funding, L.P. for the right to purchase up to 817,142 shares of the Registrant's common stock at an exercise price of \$1.4578, as incorporated by reference from Exhibit 99.6 to the Registrant's Current Report on Form 8-K, dated January 31, 2001, and filed on February 26, 2001.

- 10.10 Common Stock Purchase Warrant, dated August 29, 2000, granted by the Registrant to Capital Bank-Grawe Gruppe AG (f/k/a RBB Bank Aktiengesellschaft) for the right to purchase up to 150,000 shares of the Registrant's common stock at an exercise price of \$1.50 per share, as incorporated by reference from Exhibit 4.3 to the Registrant's Current Report on Form 8-K, dated August 31, 2000, and filed on September 5, 2000.
- 10.11 Warrant, dated November 29, 2000, granted by the Registrant to Capital Bank (f/k/a RBB Bank Aktiengesellschaft) for the right to purchase up to 300,000 shares of the Registrant's common stock at an exercise price of \$1.8750, as incorporated by reference from Exhibit 99.5 to the Registrant's Current Report on Form 8-K, dated December 22, 2000, and filed on January 17, 2001. Substantially similar warrants for the purchase of an aggregate 570,000 shares were issued to Capital Bank as follows: (a) a warrant, dated October 30, 2000, for the right to purchase up to 150,000 shares at an exercise price of \$1.625; (b) a warrant, dated December 29, 2000, for the right to purchase up to 105,000 shares at an exercise price of \$1.4219, (c) a warrant, dated January 31, 2001, for the right to purchase up to 105,000 shares at an exercise price of \$1.9688, (d) a warrant, dated February 28, 2001, for the right to purchase up to 105,000 shares at an exercise price of \$1.9375, and (e) a warrant, dated March 30, 2001, for the right to purchase up to 105,000 shares at an exercise price of \$1.8125. Copies of these Warrants will be provided to the Commission upon request.

<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>	<b><u>Sequential Page No.</u></b>
10.12	Common Stock Purchase Warrant, dated July 9, 2001, granted by the Registrant to Capital Bank-Grawe Gruppe AG for the right to purchase up to 1,839,405 shares of the Registrant's common stock at an exercise price of \$1.75 per share.	64
10.13	Common Stock Purchase Warrant, dated July 9, 2001, granted by the Registrant to Herbert Strauss for the right to purchase up to 625,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share.	72
10.14	Common Stock Purchase Warrant, dated June 1, 2001, granted by the Registrant to National Securities Corporation for the right to purchase of up to 250,000 shares of the Registrant's common stock at an exercise price of \$1.50 per share. A substantially similar warrant, dated June 1, 2001, was granted by the Registrant to National Securities Corporation for the purchase of up to 360,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share. A copy of this Warrant will be provided to the Commission upon request.	80
10.15	Common Stock Purchase Warrant, dated April 1, 1999, granted by the Registrant to Strategic Growth International, Inc. for the right to purchase up to 240,000 shares of the Registrant's common stock at an exercise price of \$1.20 per share. Substantially similar warrants for the purchase of an aggregate 566,908 shares were issued to Strategic Growth International, Inc. as follows: (a) a warrant, dated April 1, 1999 for the right to purchase up to 240,000 shares at an exercise price of \$1.40, (b) a warrant, dated December 22, 2000, for the right to purchase up to 213,888 shares at an exercise price of \$1.44, (c) a warrant, dated February 1, 2001, for the right to purchase up to 34,028 shares at an exercise price of \$1.44, (d) a warrant, dated March 9, 2001, for the right to purchase up to 24,305 shares at an exercise price of \$1.44, and (e) a warrant, dated July 31, 2001, for the right to purchase up to 54,687 shares at an exercise price of \$1.44. Copies will be provided to the Commission upon request.	90
10.16	Warrant Agreement, dated January 25, 2000, granted by the Registrant to	97



Ryan, Beck & Co., L.L.C. ("Ryan Beck") for the purchase of up to 33,750 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrant Agreements, dated January 25, 2000, for the right to purchase up to an aggregate 116,250 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Randy Rock (20,625 shares), Michael Kollender (20,625 shares), Robert Goodwin (20,000 shares), Robert C. Mayer, Jr. (23,000 shares), Paul Cronson (23,000 shares), Meera Murdeshwar (6,000 shares), Kelsey Ann Goodwin Trust (1,500 shares), and Christopher Todd Goodwin Trust (1,500 shares). Copies will be provided to the Commission upon request.

- 10.17 Warrant, dated December 22, 2000, issued by the Registrant to Ryan, Beck & Co., LLC for the purchase of 213,889 shares of the Registrant's common stock, as incorporated by reference from Exhibit 99.6 to the Registrant's Current Report on Form 8-K dated January 31, 2001, and filed on February 26, 2001. Substantially similar Warrants, dated December 22, 2000, for the right to purchase up to an aggregate 855,555 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (26,737 shares), Michael Kollender (147,048 shares), Randy Rock (147,048 shares), Robert Goodwin (166,907 shares), Robert C. Mayer, Jr. (169,908 shares), Paul Cronson (169,907 shares), Meera Murdeshwar (25,000 shares), Kelsey Ann Goodwin Trust (1,500 shares), and Christopher Todd Goodwin Trust (1,500 shares). Copies will be provided to the Commission upon request.

<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>	<b><u>Sequential Page No.</u></b>
10.18	Warrant Agreement, dated January 31, 2001, granted by the Registrant to Ryan, Beck & Co., LLC for the right to purchase up to 34,028 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrants, dated January 31, 2001, for the right to purchase up to an aggregate 136,110 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (4,253 shares), Michael Kollender (23,394 shares), Randy Rock (23,394 shares), Robert Goodwin (26,690 shares), Robert C. Mayer, Jr. (26,689 shares), Paul Cronson (26,690 shares), and Meera Murdeshwar (5,000 shares). Copies will be provided to the Commission upon request.	118
10.19	Warrant Agreement, dated March 9, 2001, granted by the Registrant to Ryan, Beck & Co., LLC for the right to purchase up to 24,306 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrants, dated March 9, 2001, for the right to purchase up to an aggregate 97,222 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (3,038 shares), Michael Kollender (16,710 shares), Randy Rock (16,710 shares), Robert Goodwin (19,255 shares), Robert C. Mayer, Jr. (19,255 shares), Paul Cronson (19,254 shares), and Meera Murdeshwar (3,000 shares). Copies will be provided to the Commission upon request.	143
10.20	Warrant Agreement, dated July 31, 2001, granted by the Registrant to Paul Cronson for the right to purchase up to 43,295 shares of the Registrant's common stock at an exercise price of \$1.44 per share. Substantially similar Warrants, dated July 31, 2001, for the right to purchase up to an aggregate 218,752 shares of the Registrant's common stock at an exercise price of \$1.44 per share were granted by the Registrant to Ryan Beck (6,836 shares), Ryan Beck (54,688), Michael Kollender (37,598 shares), Randy Rock (37,598 shares), Robert Goodwin (43,294 shares), Robert C. Mayer, Jr. (43,294 shares), and Meera Murdeshwar (6,837 shares). Copies will be provided to the Commission upon request.	168

<b><u>Exhibit No.</u></b>	<b><u>Description</u></b>	<b><u>Sequential Page No.</u></b>
10.21	Warrant to Purchase Common Stock, dated July 30, 2001, granted by the Registrant to David Avital for the purchase of up to 143,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share. Substantially similar warrants for the purchase of an aggregate 4,254,566 were issued to Capital Bank (842,995 shares), CICI 1999 Qualified Annuity Trust (85,715 shares), Gerald D. Cramer (85,715 shares), CRM 1999 Enterprise Fund 3 (200,000 shares), Craig S. Eckenthal (57,143 shares), Danny Ellis Living Trust (250,000 shares), Europa International, Inc. (571,428 shares), Harvey Gelfenbein (28,571 shares), A. C. Israel Enterprises (285,715 shares), Kuekenhof Partners, L.P. (40,000), Kuekenhof Equity Fund, L.P. (60,000 shares), Jack Lahav (571,429 shares), Joseph LaMotta (28,571 shares), Jay B. Langner (28,571 shares), The F. M. Grandchildren Trust (42,857 shares), Mathers Associates (228,571 shares), Peter Melhado (115,000 shares), Pamela Equities Corp. (42,857 shares), Josef Paradis (143,000 shares), Readington Associates (57,143 shares), Dr. Ralph Richart (225,000 shares), Edward J. Rosenthal Profit Sharing Plan (28,571 shares), Yariv Sapir IRA (85,714 shares), and Bruce Wrobel (150,000 shares), respectively. Copies will be provided to the Commission upon request.	193
10.22	Common Stock Purchase Warrant, dated July 30, 2001, granted by the Registrant to Kennerman Associates for the purchase of 15,750 shares of the Registrant's common stock at an exercise price of \$1.75 per share. Substantially similar warrants, dated July 30, 2001, for the purchase of an aggregate 108,000 shares of the Registrant's common stock at an exercise price of \$1.75 per share were issued to Ryan, Beck & Co., L.L.C. (34,000 shares), Larkspur Capital Corporation (34,000 shares), and National Securities Corporation (40,000 shares). Copies will be provided to the Commission upon request.	208
10.23	Common Stock Purchase Warrant, dated July 31, 2001, granted by the Registrant to Associated Mezzanine Investors-PESI (I), L.P. for the purchase of up to 712,073 shares of the Registrant's common stock at an exercise price of \$1.50 per share. A substantially similar warrant was issued to Bridge East Capital L.P. for the right to purchase of up to 569,658 shares of the Registrant's common stock, and a copy will be provided to the Commission upon request.	220
23.1	Consent of BDO Seidman, LLP.	231
23.2	Consent of Conner & Winters, as contained in Exhibit 5.1 hereto and incorporated herein by reference.	
24.1	Powers of Attorney for Messrs. Zwecker, Colin, Sullivan, and Lahav, as contained in the Power of Attorney of the signature page included in this Registration Statement.	

# CONNER & WINTERS

A PROFESSIONAL CORPORATION

## LAWYERS

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211 NORTH ROBINSON, SUITE 1700  
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WRITER'S DIRECT NUMBER  
(405) 272-5750

WRITER'S E-MAIL ADDRESS  
isteinhorn@cwlaw.com

October 1, 2001

Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32653

Re: *Perma-Fix Environmental Services, Inc.; Form S-3 Registration Statement;  
Registering 21,619,722 Shares of Common Stock; Our File No. 7034.49*

Ladies and Gentlemen:

We have acted as special counsel to Perma-Fix Environmental Services, Inc. (the "Company") in connection with the preparation of the Form S-3 Registration Statement (the "Registration Statement") to be filed by the Company with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Act"). The Registration Statement includes 21,619,722 shares of the Company's common stock, par value \$.001 per share (the "Common Stock") to be reoffered or resold from time to time by certain Selling Stockholders (as defined in the Registration Statement).

The 21,619,722 shares of Common Stock included in the Registration Statement consist of the following:

- (a) 250,000 shares (the "Dividend Shares") that have been issued or are issuable by the Company to Capital Bank-Grawe Gruppe AG ("Capital Bank") in payment of dividends on the Company's outstanding Series 17 Class Q Convertible Preferred Stock (the "Series 17 Preferred");
- (b) 1,666,667 shares (the "Conversion Shares") that are issuable to Capital Bank upon conversion of shares of the Company's Series 17 Preferred;

Perma-Fix Environmental Services, Inc.

(c) 1,020,000 shares (the "Capital Bank Warrant Shares") that are issuable to Capital Bank upon exercise of the following warrants held by Capital Bank (collectively, the "Capital Bank Warrants"):

- warrant, \* 150,000 shares issuable at an exercise price of \$1.50 under a dated August 29, 2000;
- warrant, \* 150,000 shares issuable at an exercise price of \$1.625 under a dated October 30, 2000;
- warrant, \* 300,000 shares issuable at an exercise price of \$1.875 under a dated November 29, 2000;
- warrant, \* 105,000 shares issuable at an exercise price of \$1.4219 under a dated December 29, 2000;
- warrant, \* 105,000 shares issuable at an exercise price of \$1.9688 under a dated January 31, 2001;
- warrant, \* 105,000 shares issuable at an exercise price of \$1.9375 under a dated February 28, 2001; and
- warrant, \* 105,000 shares issuable at an exercise price of \$1.8125 under a dated March 30, 2001;

(d) 4,397,566 shares (the "Unit Warrant Shares") that are issuable by the Company upon the exercise of the following warrants (collectively, the "Unit Warrants"), each having an exercise price of \$1.75 per share, issued to subscribers under the Company's private placement described under the Confidential Private Placement Memorandum, dated April 6, 2001, as amended (the "Private Placement"):

- \* 143,000 shares issuable to David Avital under a warrant, dated July 30, 2001;
- \* 842,995 shares issuable to Capital Bank under a warrant, dated July 30, 2001;
- \* 85,715 shares issuable to the CICI 1999 Qualified Annuity Trust under a warrant, dated July 30, 2001;

- \* 85,715 shares issuable to Gerald D. Cramer under a warrant, dated July 30, 2001;
- \* 200,000 shares issuable to the CRM 1999 Fund 3 under a warrant, dated July 30, 2001;
- \* 57,143 shares issuable to Craig S. Eckenthal under a warrant, dated July 30, 2001;
- warrant, \* 250,000 shares issuable to the Danny Ellis Living Trust under a  
dated July 30, 2001;
- \* 571,428 shares issuable to Europa International, Inc. under a warrant, dated July 30, 2001;
- \* 28,571 shares issuable to Harvey Gelfenbein under a warrant, dated July 30, 2001;
- \* 285,715 shares issuable to A. C. Israel Enterprises under a warrant, dated July 30, 2001;
- \* 40,000 shares issuable to Kuekenhof Partners, L.P. under a warrant, dated July 30, 2001;
- warrant, \* 60,000 shares issuable to Kuekenhof Equity Fund, L.P. under a  
dated July 30, 2001;
- \* 571,429 shares issuable to Jack Lahav under a warrant, dated July 30, 2001;
- \* 28,571 shares issuable to Joseph LaMotta under a warrant, dated July 30, 2001;
- \* 28,571 shares issuable to Jay B. Langner under a warrant, dated July 30, 2001;
- \* 42,857 shares issuable to The F. M. Grandchildren Trust under a warrant, dated July 30, 2001;
- \* 228,571 shares issuable to Mathers Associates under a warrant, dated July 30, 2001;

- \* 115,000 shares issuable to Peter Melhado under a warrant, dated July 30, 2001;

- \* 42,857 shares issuable to Pamela Equities Corp. under a warrant, dated July 30, 2001;
- \* 143,000 shares issuable to Josef Paradis under a warrant, dated July 30, 2001;
- \* 57,143 shares issuable to Readington Associates under a warrant, dated July 30, 2001;
- \* 225,000 shares issuable to Dr. Ralph Richart under a warrant, dated July 30, 2001;
- \* 28,571 shares issuable to Edward J. Rosenthal Profit Sharing Plan under a warrant, dated July 30, 2001;
- \* 85,714 shares issuable to Yariv Sapir IRA under a warrant, dated July 30, 2001; and
- \* 150,000 shares issuable to Bruce Wrobel under a warrant, dated July 30, 2001;

(e) 1,281,731 shares (the "Note Warrant Shares") that are issuable upon the exercise of the following warrants (collectively, the "Note Warrants") issued in connection with the sale by the Company of its 13.50% Senior Subordinated Notes, due July 31, 2006 pursuant to the Note and Warrant Purchase Agreement, dated July 31, 2001:

- \* 712,073 shares issuable at an exercise price of \$1.4572 to Mezzanine Investors-PESI (I), L.P. upon the exercise of a warrant, dated July 31, 2001; and
- \* 569,658 shares issuable at an exercise price of \$1.4572 to Bridge Capital, L.P. upon the exercise of a warrant, dated July 31, 2001;

(f) 817,148 shares (the "BHC Shares") that are issuable to BHC Interim L.P. at an exercise price of \$1.4578 per share upon the exercise of a warrant, dated January 31, 2001 (the "BHC Warrant");

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October 1, 2001  
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(g) 625,000 shares (the "Capital Exchange Warrant Shares") that are issuable to Herbert Strauss at an exercise price of \$1.75 per share upon the exercise

- of a warrant, dated July 9, 2001 (the "Capital Exchange Warrant");
- (h) 610,000 shares (the "National Shares") that are issuable to National Securities Corporation ("National") upon exercise of the following warrants held by National (collectively, the "National Warrants"):
- \* 250,000 shares issuable at an exercise price of \$1.50 per share upon the exercise of a Common Stock Purchase Warrant, dated June 1, 2001;
  - \* 360,000 shares issuable at an exercise price of \$1.75 per share upon the exercise of a Common Stock Purchase Warrant, dated June 1, 2001;
- (i) 806,908 shares (the "Strategic Shares") that are issuable to Strategic Growth International, Inc. upon exercise of the following warrants (collectively, the "Strategic Warrants"):
- \* 240,000 shares issuable at an exercise price of \$1.40 per share under a Common Stock Purchase Warrant, dated April 1, 1999;
  - \* 240,000 shares issuable at an exercise price of \$1.20 per share under a Common Stock Purchase Warrant, dated April 1, 1999;
  - \* 213,888 shares issuable at an exercise price of \$1.44 per share under a Common Stock Purchase Warrant, dated December 22, 2000;
  - \* 34,028 shares issuable at an exercise price of \$1.44 per share under a Common Stock Purchase Warrant, dated February 1, 2001;
  - \* 24,305 shares issuable at an exercise price of \$1.44 per share under a Common Stock Purchase Warrant, dated March 9, 2001; and
  - \* 54,687 shares issuable at an exercise price of \$1.44 per share under a Common Stock Purchase Warrant, dated July 31, 2001;
- (j) 892,275 shares (the "Ryan Beck Shares") which are issuable upon exercise of the following warrants (collectively, the "Ryan Beck Warrants"):

25,  
2000;

- \* 20,625 shares issuable at an exercise price of \$1.44 per share to Michael Kollender under a Warrant Agreement, dated January 25, 2000;
- \* 20,625 shares issuable at an exercise price of \$1.44 per share to Randy Rock under a Warrant Agreement, dated January 25, 2000;
- \* 213,889 shares issuable at an exercise price of \$1.44 per share to Ryan Beck under Warrants, dated December 22, 2000;
- \* 26,737 shares issuable at an exercise price of \$1.44 per share to Ryan Beck under Warrants, dated December 22, 2000;
- \* 147,048 shares issuable at an exercise price of \$1.44 per share to Michael Kollender under Warrants, dated December 22, 2000;
- \* 147,048 shares issuable at an exercise price of \$1.44 per share to Randy Rock under Warrants, dated December 22, 2000;
- \* 34,028 shares issuable at an exercise price of \$1.44 per share to Ryan Beck under a Warrant Agreement, dated January 31, 2001;
- \* 4,253 shares issuable at an exercise price of \$1.44 per share to Ryan Beck under a Warrant Agreement, dated January 31, 2001;
- \* 23,394 shares issuable at an exercise price of \$1.44 per share to Michael Kollender under a Warrant Agreement, dated January 31, 2001;
- \* 23,394 shares issuable at an exercise price of \$1.44 per share to Randy Rock under a Warrant Agreement, dated January 31, 2001;
- \* 24,306 shares issuable at an exercise price of \$1.44 per share to Ryan Beck under a Warrant Agreement, dated March 9, 2001;
- \* 3,038 shares issuable at an exercise price of \$1.44 per share to Ryan Beck under a Warrant Agreement, dated March 9, 2001;



- Michael
  - \* 16,710 shares issuable at an exercise price of \$1.44 per share to Kollender under a Warrant Agreement, dated March 9, 2001;
- Randy
  - \* 16,710 shares issuable at an exercise price of \$1.44 per share to Rock under a Warrant Agreement, dated March 9, 2001;
- Beck
  - \* 6,836 shares issuable at an exercise price of \$1.44 per share to Ryan under a Warrant Agreement, dated July 31, 2001;
- Beck
  - \* 54,688 shares issuable at an exercise price of \$1.44 per share to Ryan under a Warrant Agreement, dated July 31, 2001;
- Michael
  - \* 37,598 shares issuable at an exercise price of \$1.44 per share to Kollender under a Warrant Agreement, dated July 31, 2001; and
- Randy
  - \* 37,598 shares issuable at an exercise price of \$1.44 per share to Rock under a Warrant Agreement, dated July 31, 2001;
- (k) of the
  - 892,275 shares (the "Larkspur Shares") which are issuable upon exercise of the following warrants (collectively, the "Larkspur Warrants"):
- Robert
  - \* 20,000 shares issuable at an exercise price of \$1.44 per share to Goodwin under a Warrant Agreement, dated January 25, 2000;
- Robert C.
  - \* 23,000 shares issuable at an exercise price of \$1.44 per share to Mayer, Jr. under a Warrant Agreement, dated January 25, 2000;
- Meera
  - \* 23,000 shares issuable at an exercise price of \$1.44 per share to Paul Cronson under a Warrant Agreement, dated January 25, 2000;
  - \* 6,000 shares issuable at an exercise price of \$1.44 per share to Murdeshwar under a Warrant Agreement, dated January 25, 2000;
  - \* 1,500 shares issuable at an exercise price of \$1.44 per share to the Kelsey Ann Goodwin Trust under a Warrant Agreement, dated January 25, 2000;
  - \* 1,500 shares issuable at an exercise price of \$1.44 per share to the Christopher Todd Goodwin Trust under a Warrant Agreement, dated January 25, 2000;

- \* 166,907 shares issuable at an exercise price of \$1.44 per share to Robert Goodwin under a Warrant Agreement, dated December 22, 2000;
- \* 169,908 shares issuable at an exercise price of \$1.44 per share to Robert C. Mayer, Jr. under a Warrant Agreement, dated December 22, 2000;
- \* 169,907 shares issuable at an exercise price of \$1.44 per share to Paul Cronson under a Warrant Agreement, dated December 22, 2000;
- \* 25,000 shares issuable at an exercise price of \$1.44 per share to Meera Murdeshwar under a Warrant Agreement, dated December 22, 2000;
- \* 1,500 shares issuable at an exercise price of \$1.44 per share to the Kelsey Ann Goodwin Trust under a Warrant Agreement, dated December 22, 2000;
- \* 1,500 shares issuable at an exercise price of \$1.44 per share to the Christopher Todd Goodwin Trust under a Warrant Agreement, dated December 22, 2000;
- \* 26,690 shares issuable at an exercise price of \$1.44 per share to Robert Goodwin under a Warrant Agreement, dated January 31, 2001;
- \* 26,689 shares issuable at an exercise price of \$1.44 per share to Robert C. Mayer, Jr. under a Warrant Agreement, dated January 31, 2001;
- \* 26,690 shares issuable at an exercise price of \$1.44 per share to Paul Cronson under a Warrant Agreement, dated January 31, 2001;
- \* 5,000 shares issuable at an exercise price of \$1.44 per share to Meera Murdeshwar under a Warrant Agreement, dated January 31, 2001;
- \* 19,255 shares issuable at an exercise price of \$1.44 per share to Robert Goodwin under a Warrant Agreement, dated March 9, 2001;
- \* 19,255 shares issuable at an exercise price of \$1.44 per share to Robert

C. Mayer, Jr. under a Warrant Agreement, dated March 9, 2001;

Paul

- \* 19,254 shares issuable at an exercise price of \$1.44 per share to Cronson under a Warrant Agreement, dated March 9, 2001;

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Meera

- \* 3,000 shares issuable at an exercise price of \$1.44 per share to Murdeshwar under a Warrant Agreement, dated March 9, 2001;

Robert

- \* 43,294 shares issuable at an exercise price of \$1.44 per share to Goodwin under a Warrant Agreement, dated July 31, 2001;

Robert C.

- \* 43,294 shares issuable at an exercise price of \$1.44 per share to Mayer, Jr. under a Warrant Agreement, dated July 31, 2001;

Paul

- \* 43,295 shares issuable at an exercise price of \$1.44 per share to Cronson under a Warrant Agreement, dated July 31, 2001; and

Meera

- \* 6,837 shares issuable at an exercise price of \$1.44 per share to Murdeshwar under a Warrant Agreement, dated July 31, 2001;

(l) exercise 123,750 shares (the "Placement Agent Shares") which are issuable upon of the following warrants (collectively, the "Placement Agent Warrants"):

Kennerman

- \* 15,750 shares issuable at an exercise price of \$1.75 per share to Associates under a Common Stock Purchase Warrant, dated July 30, 2001;

Ryan Beck

- \* 34,000 shares issuable at an exercise price of \$1.75 per share to under a Common Stock Purchase Warrant, dated July 30, 2001;

Larkspur

dated July 30,

- \* 34,000 shares issuable at an exercise price of \$1.75 per share to Capital Corporation under a Common Stock Purchase Warrant, 2001; and

National

- \* 40,000 shares issuable at an exercise price of \$1.75 per share to under a Common Stock Purchase Warrant, dated July 30, 2001;

(m) 1,999,437 shares (the "Exchange Shares") issued to Capital Bank

pursuant to the terms of the Debt-For-Stock Exchange Agreement, dated July 9, 2001 (the "Exchange Agreement"), consisting of 1,893,505 shares issued as partial consideration of the transactions contemplated under the Exchange Agreement and 105,932 shares issued as a portion of the closing fee in connection with the closing of the transactions contemplated under the Exchange Agreement;

(n) 4,397,966 shares (the "Unit Shares") issued, or to be issued, to the following subscribers under the Company's Private Placement:

Perma-Fix Environmental Services, Inc.

October 1, 2001

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- \* 143,000 shares issued or to be issued to David Avital;
- \* 842,995 shares issued or to be issued to Capital Bank;
- \* 85,715 shares issued or to be issued to the CICI 1999 Qualified Annuity Trust;
- \* 85,715 shares issued or to be issued to Gerald D. Cramer;
- \* 200,000 shares issued or to be issued to the CRM 1999 Fund 3;
- \* 57,143 shares issued or to be issued to Craig S. Eckenthal;
- \* 250,000 shares issued or to be issued to the Danny Ellis Living Trust;
- \* 571,428 shares issued or to be issued to Europa International, Inc.;
- \* 28,571 shares issued or to be issued to Harvey Gelfenbein;
- \* 285,715 shares issued or to be issued to A. C. Israel Enterprises;
- \* 40,000 shares issued or to be issued to Kuekenhof Partners, L.P.;
- \* 60,000 shares issued or to be issued to Kuekenhof Equity Fund, L.P.;
- \* 571,429 shares issued or to be issued to Jack Lahav;
- \* 28,571 shares issued or to be issued to Joseph LaMotta;
- \* 28,571 shares issued or to be issued to Jay B. Langner;
- \* 42,857 shares issued or to be issued to The F. M. Grandchildren Trust;

- \* 228,571 shares issued or to be issued to Mathers Associates;
- \* 115,000 shares issued or to be issued to Peter Melhado;
- \* 42,857 shares issued or to be issued to Pamela Equities Corp.;

Perma-Fix Environmental Services, Inc.  
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- warrant,  
     \* 143,000 shares issued or to be issued to Josef Paradis under a  
        dated July 30, 2001;
- \* 57,143 shares issued or to be issued to Readington Associates;
- \* 225,000 shares issued or to be issued to Dr. Ralph Richart;
- Sharing Plan;  
     \* 28,571 shares issued or to be issued to Edward J. Rosenthal Profit
- \* 85,714 shares issued or to be issued to Yariv Sapir IRA; and
- \* 150,000 shares issued or to be issued to Bruce Wrobel.

We have examined such corporate records, certificates of officers, other documents and questions of law, as we have considered necessary or appropriate for the purposes of this opinion.

The Company is planning to call a special meeting of its stockholders to vote for the approval of an amendment to the Company's Amended and Restated Certificate of Incorporation, as amended (the "Certificate of Incorporation") increasing the authorized number of shares of Common Stock from 50,000,000 to 75,000,000. The Company has advised us that the Company will seek such stockholder approval at a special meeting of stockholders to be held prior to December 31, 2001 (the "Special Meeting"). For purposes of this opinion, we have assumed that the Special Meeting, when held, is validly held and the requisite number of stockholders entitled to vote at the Special Meeting approve the amendment to the Certificate of Incorporation increasing the number of authorized shares of Common Stock from 50,000,000 to 75,000,000.

On the basis of such examination, review, and assumption, we are of the opinion that:

- (a) the Dividend Shares issued or issuable in payment of dividends owing on the Series 17 Preferred, pursuant to the terms of the Series 17 Preferred constitute, or will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;
- (b) the Conversion Shares issuable pursuant to the terms of the Series 17 Preferred will constitute, when so issued, validly issued, fully paid, and nonassessable shares of

Common Stock;

(c) the Capital Bank Warrant Shares issuable pursuant to the terms of the Capital Bank Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

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October 1, 2001  
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(d) the Unit Warrant Shares issuable pursuant to the terms of the Unit Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(e) the Note Warrant Shares issuable pursuant to the terms of the Note Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(f) the BHC Shares issuable pursuant to the terms of the BHC Warrant will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(g) the Capital Exchange Warrant Shares issuable pursuant to the terms of the Capital Exchange Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(h) the National Shares issuable pursuant to the terms of the National Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(i) the Strategic Shares issuable pursuant to the terms of the Strategic Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(j) the Ryan Beck Shares issuable pursuant to the terms of the Ryan Beck Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(k) the Larkspur Shares issuable pursuant to the terms of the Larkspur Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(l) the Placement Agent Shares issuable pursuant to the terms of the Placement Agent Warrants will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock;

(m) the Exchange Shares previously issued pursuant to the terms of the Exchange Agreement constitute issued, fully paid, and nonassessable shares of Common Stock; and

Perma-Fix Environmental Services, Inc.  
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(n) the Unit Shares previously issued or to be issued pursuant to the terms of the Private Placement constitute, or will constitute, when so issued, validly issued, fully paid, and nonassessable shares of Common Stock.

We consent to the reference to our firm under the heading "Legal Opinion" and to the filing of this opinion as Exhibit 5.1 to said Registration Statement.

Very truly yours,

CONNER & WINTERS,  
A Professional Corporation

/s/ Conner & Winters, P.C.

## **FINANCIAL ADVISORY AND CONSULTING AGREEMENT**

This agreement ("Agreement") is made and entered into this 5th day of December 2000 between PERMA-FIX ENVIRONMENTAL SERVICES, INC, a Delaware corporation (the "Company"), and National Securities Corporation (the "Consultant").

In consideration of and for the mutual promises and covenants contained herein, and for other good and valuable consideration (the receipt of which is hereby acknowledged) the parties hereto mutually agree and intend to be legally bound to the terms of this Agreement as follows:

1. Purpose. The Company hereby retains the Consultant on a non-exclusive basis during the term specified to render consulting advice to the Company relating to financial, investment banking and merger/acquisition matters, upon the terms and conditions as set forth herein.

2. Terms and Consideration. This Agreement shall be effective for a period of twelve months commencing on the date first written above (the "Engagement Period"), unless extended by mutual written agreement of the Company and the Consultant. The Company shall issue to Consultant, upon execution of this Agreement, 250,000 common stock purchase warrants (the "Warrants") exercisable for a period of five (5) years, with exercise price of \$1.50. The Warrants shall be non-assessable, non-refundable and contain customary terms, including, but not limited to, piggyback registration rights, and cashless exercise provisions. Additionally, the company shall issue 400,000 common stock purchase warrants (the "Warrants") exercisable for a period of five (5) years, with exercise price of \$1.75. The Warrants shall be non-assessable, non-refundable and contain customary terms, including, but not limited to, piggyback registration rights, and cashless exercise provisions.

3. Financial Advisory Services of Consultant. Consultant, based on its review of the Company to date, believes that it may assist the Company by performing the financial advisory services that are listed below and Consultant shall be limited to providing only those such financial advisory services to the Company. In connection with Consultant providing such financial advisory services to the Company, the Company shall provide Consultant with any information that Consultant deems appropriate. The Company hereby acknowledges that Consultant will be using and relying on said information without independent verification and that Consultant assumes no responsibility for the accuracy and completeness of any information provided

Shrewsbury, NJ  
07702

741-5476

595 Shrewsbury Avenue,

Phone 732-741-8959 Fax 732-



to it by the Company. In performance of these duties, the Consultant shall provide the Company with the benefits of its best judgment and efforts. It is understood and acknowledged by the parties that the value of the Consultant's advice is not measurable in any quantitative manner, and that the Consultant shall not be obligated to spend any specific amount of time performing its duties hereunder.

(a) Providing Company exposure to the investment community at large through the dissemination of information.

(b) Assisting in the Company's financial public relations, by participating in discussions with the Company and the financial community.

(c) Advising the Company about its financial structure and that of its divisions or subsidiaries or any of its projects, as such relate to the public market for the Company's equity securities.

(d) Advising the Company with respect to acquisitions in connection with the possible effects on the public market for the Company's equity securities.

(e) Advising the Company on the public market for Company's securities and the timing and structure of any future public offering or private placement of its equity securities.

Should the Company desire Consultant to provide any financial advisory service(s) not listed above, the Company and Consultant shall enter into an additional engagement letter to be executed by the parties hereto at the commencement of the additional financial advisory service(s) to be rendered by Consultant.

4. Consultant's Relationships with Others. The Company acknowledges that the Consultant or its affiliates is in the business of providing financial, investment banking and merger/acquisition services and consulting advice (of all types contemplated by this Agreement) to others. Nothing herein contained shall be construed to limit or restrict the Consultant in conducting such business with respect to others, or in rendering such advise to others.

5. Confidential Information. In connection with the rendering of services hereunder, Consultant has been or will be furnished with confidential information concerning the Company including, but not limited to, financial statements and information, cost and expense data, production data, trade secrets, marketing and customer data, and such other information not generally obtained from public or published information or trade sources. Such information shall be deemed "Confidential Material" and, except as specifically provided herein, shall not be disclosed by Consultant without prior written consent of the Company. In the event Consultant is required by applicable law or legal process to disclose any of the Confidential Material, it is agreed that Consultant will deliver to the Company prompt notice of such requirement prior to disclosure of same to permit the Company to seek an appropriate protective order and/or waive compliance of this provision. If, in the absence of a protective order or receipt of written waiver, Consultant is nonetheless, in the written opinion of counsel, compelled to disclose any Confidential Material, Consultant may do so without liability hereunder provided that notice of such prospective disclosure is delivered to the Company prior to actual disclosure. Following the termination of this Agreement and a written request by the Company, Consultant shall deliver to the Company all Confidential Material.

6. Consultant's Liability & Indemnification of Consultant by Company.

- (a) In the absence of gross negligence or willful misconduct on the part of Consultant or Consultant's material breach of this Agreement, Consultant shall not be liable to the Company or to any officer, director, employee, agent, representative, stockholder or creditor of the Company for any action or omission of Consultant or any of its officers, directors, employees, agents, representatives or stockholders in the course of, or in connection with, rendering or performing any services hereunder. Should Consultant be found liable for any acts or omissions, the liability of Consultant pursuant to this Agreement shall be limited to the aggregate fees received by Consultant hereunder, which shall not include any liability for incidental, consequential or punitive damages.
- (b) The Company agrees to indemnify Consultant in accordance with the provisions of Annex A hereto, which is incorporated by reference in its entirety and made a part hereof.

7. Termination. This Agreement may be terminated at any time during the Engagement Period by Consultant upon five (5) days prior written notice to the Company, in the event that Consultant becomes aware of (i) any change in the business or operations of the Company which Consultant reasonably believes may adversely affect Consultant's ability to render the services contemplated hereunder, (ii) any misrepresentation by the Company with respect to the business operations, assets, condition (financial or otherwise), results of operations or prospects of the Company, or (iii) any breach by the Company of its obligations under this Agreement.

This Agreement may be terminated by Company only in the event of a material breach by Consultant of its obligations hereunder, which breach remains uncured for a period of thirty days after written notice of the breach is provided to Consultant.

In the event of termination (i) this Agreement shall become void, without liability on the part of

Consultant or its affiliates, directors, officers or stockholders, and (ii) Consultant shall be entitled to expenses it has incurred up to the date of such termination.

Unless this Agreement is terminated or a new agreement is executed between Company and

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Consultant, at the end of the Engagement Period, this Agreement shall automatically be renewed and extended on a month-to-month basis. At such time, either party may terminate the Agreement for any reason upon the provision of thirty days prior written notice.

8. Expenses. The Company, upon receipt of appropriate supporting documentation, shall reimburse the Consultant for any and all reasonable out-of-pocket expenses incurred in connection with services provided to the Company including but not limited to legal, travel, lodging and meals, entertainment, postage, photocopying and long distance telephone expenses. The Company shall reimburse the Consultant within 15 days of receipt of supporting documentation. The Company hereby acknowledges that unless otherwise specifically stated herein, that neither Consultant, nor its directors, employees or agents is responsible for any fees or commissions payable now or in the future to any finder or to any other financial or other advisor utilized or retained by the Company.

9. Sales or Distributions of Securities. If the Consultant assists the Company in the sale or distribution of securities, the Consultant shall receive fees and other forms of compensation as are customarily received by investment bankers in similar transactions. Such public offering or private placement, undertaken by the Consultant on behalf of the Company, shall be subject to an additional agreement to be executed by the parties hereto at such time as is appropriate.

10. Limitation Upon the Use of Advice and Services.

(a) No person or entity, other than the Company or any of its subsidiaries or directors or officers of each of the foregoing, shall be entitled to make use of or rely upon the advice of the Consultant to be given hereunder, and the Company shall not transmit such advice to, or encourage or facilitate the use or reliance upon such advice by others without the prior consent of the Consultant.

(b) Company hereby acknowledges that Consultant, for services rendered under this Agreement, makes no commitment whatsoever to recommend or advise its clients to purchase the securities of the Company. Research reports that may be prepared by Consultant will, when and if prepared, be based solely on the merits, and independent judgment of analysts of the Consultant.

(c) Company hereby acknowledges that Consultant, for services rendered under this Agreement, makes no commitment whatsoever to make a market in any of the Company's securities on any stock exchange or in any electronic marketplace. Any decision by Consultant to make a market in any of the Company's securities shall be based solely on the independent judgment of Consultant's traders and related supervisory personnel.

(d) Use of the Consultant's name in annual reports or any other report of the Company or releases by the Company require the prior approval of the Consultant unless the Company is required by law to include Consultant's name in such annual reports, other report or release of the Company, in which event the Company shall furnish to Consultant copies of such annual reports or other reports or releases using Consultant's name in advance of publication by the Company, its affiliates or assigns.

12. Discretion. Nothing contained herein shall require the Company to enter into any transaction presented to it by National, which decision shall be at the Company's sole discretion.

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13. Severability. Any term or provision of this Agreement which is invalid or unenforceable in any jurisdiction shall, as to that jurisdiction, be ineffective to the extent of such invalidity or unenforceability without rendering invalid or unenforceable the remaining terms and provisions of this Agreement or affecting the validity or enforceability of any of the terms or provisions of this Agreement in any other jurisdiction. If any provision of this Agreement is so broad as to be unenforceable, the provision shall be interpreted to be only so broad as is enforceable.

14. Miscellaneous.

(a) Any notice or other communication between parties hereto shall be sufficiently given if sent by certified or registered mail, postage prepaid, or faxed and confirmed if to the Company, addressed to it at Perma-Fix Environmental Services Inc., 1940 N.W. 67<sup>th</sup> Place, Suite A, Gainesville, FL 32653 or if to the Consultant, addressed to it at National Securities Corporation, 1001 Fourth Avenue, Suite 2200, Seattle, WA 98154. Such notice or other communication shall be deemed to be given on the date of receipt.

(b) If the Consultant shall cease to do business, the provisions hereof relating to duties of the Consultant and compensation by the Company as it applies to the Consultant shall thereupon cease to be in effect, except for the Company's obligation of payment of Warrants and expenses as stated in this document. This Agreement shall survive any merger of, acquisition of, or acquisition by the Consultant and after any such merger or acquisition shall be

binding

upon the Company and the corporation surviving such merger or acquisition.

(c) This Agreement embodies the entire agreement and understanding between the Company

and the Consultant and supersedes any and all negotiations, prior discussions and preliminary

and prior agreements and understandings related to the central subject matter hereof.

(d) This agreement has been duly authorized, executed and delivered by and on behalf of

the Company and the Consultant.

(e) This Agreement shall be construed and interpreted in accordance with the laws of the State of Washington, without giving effect to its rules regarding conflicts of laws.

(f) There is no relationship of partnership, agency, employment, franchise or joint venture between the parties. Neither party has the authority to bind the other or incur any obligation on its behalf.

(g) The Company hereby acknowledges that Consultant is not a fiduciary of the Company

and that Consultant makes no representations or warranties regarding Company's ability to secure financing, whether now or in the future.

(h) This Agreement and the rights hereunder may not be assigned by Company without the

prior written consent of Consultant. This Agreement may be assigned by Consultant, in whole

of in part , at its discretion, without prior consent of Company. This Agreement shall be binding upon and inure to the benefit of the parties and their respective successors, assigns and legal representatives.

Page 5 of 7

(i) The Company shall provide Consultant with a copy of the resolution of its Board of Directors authorizing this engagement and specifically, the issuance of the Warrants and underlining shares.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date hereof.

**PERMA-FIX ENVIRONMENTAL  
SERVICES INC.**

**NATIONAL SECURITIES  
CORPORATION**

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Name: Louis Centofanti  
Title: Chairman & CEO

Name: Steven A Rothstein  
Title: Chairman

ANNEX A

INDEMNIFICATION

Recognizing that transactions of the type contemplated in this engagement sometimes result in litigation and that National Securities Corporation's ("National") role is advisory, PERMA-FIX ENVIRONMENTAL SERVICES INC. (the "Company") agrees to indemnify and hold harmless National, its affiliates (including Olympic Cascade Financial Corporation) and their respective officers, directors, employees, agents and controlling persons (collectively, the "Indemnified Parties"), from and against any losses, claims, damages and liabilities, joint or several, related to or arising in any manner out of any transaction, proposal or any other matter (collectively, the "Matters") contemplated by the engagement of National hereunder, and will promptly reimburse the Indemnified Parties for all expenses (including reasonable fees and expenses of legal counsel) as incurred in connection with the investigation of, preparation for, or defense of any pending or threatened claim related to or arising in any manner out of any Matter contemplated by the engagement of National hereunder, or any action or proceeding arising therefrom (collectively, "Proceedings"), whether or not such Indemnified Party is a formal party to any such Proceeding. Notwithstanding the foregoing, the Company shall not be liable in respect of any losses, claims, damages, liabilities or expenses that a court of competent jurisdiction shall have determined by final judgment resulted solely from the gross negligence or willful

misconduct of an Indemnified Party. The Company further agrees that it will not, without the prior written consent of National, settle compromise or consent to the entry of any judgment in any pending or threatened Proceeding in respect of which indemnification may be sought hereunder (whether or not National or any Indemnified Party is an actual or potential party to such Proceeding), unless such settlement, compromise or consent includes an unconditional release of National and each other Indemnified Party hereunder from all liability arising out of such Proceeding.

The Company agrees that if any indemnification or reimbursement sought pursuant to this letter were for any reason not to be available to any Indemnified Party or insufficient to hold it harmless as and to the extent contemplated by this letter, then the Company shall contribute to the amount paid or payable by such Indemnified Party in respect of losses, claims, damages and liabilities in such proportion as is appropriate to reflect the relative benefits to the Company and its stockholders on the one hand, and National on the other, in connection with the Matters to which such indemnification or reimbursement relates or, if such allocation is not permitted by applicable law, not only such relative benefits but also the relative faults of such parties as well as any other equitable considerations. It is hereby agreed that the relative benefits to the Company and/or its stockholders and to National with respect to National's engagement shall be deemed to be in the same proportion as (i) the total value paid or received or to be paid or received by the Company and/or its stockholders pursuant to the Matters (whether or not consummated) for which National is engaged to render services bears to (ii) the fees paid to National in connection with such engagement. In no event shall the Indemnified Parties contribute or otherwise be liable for an amount in excess of the aggregate amount of fees actually received by National pursuant to such engagement (excluding amounts received by National as reimbursement of the expenses).

The Company further agrees that no Indemnified Party shall have any liability (whether direct or indirect, in contract or tort or otherwise) to the Company for or in connection with National's engagement hereunder except for losses, claims, damages, liabilities or expenses that a court of competent jurisdiction shall have determined by final judgment resulted solely from the gross negligence or willful misconduct of such Indemnified Party. The indemnity, reimbursement and contribution obligations of the Company shall be in addition to any liability which the Company may otherwise have and shall be binding upon and inure to the benefit of any successors, assigns, heirs and personal representatives of the Company or an Indemnified Party.

The indemnity, reimbursement and contribution provisions set forth herein shall remain operative and in full force and effect regardless of (i) any withdrawal, termination or consummation of or failure to initiate or consummate any Matter referred to herein, (ii) any investigation made by or on behalf of any party hereto or any person controlling (within the

meaning of Section 15 of the Securities Act of 1933 as amended, or Section 20 of the Securities Exchange Act of 1934, as amended) any party hereto, (iii) any termination or the completion or expiration of this letter of National's engagement and (iv) whether or not National shall, or shall not be called upon to, render any formal or informal advice in the course of such engagement.



NEITHER THIS WARRANT NOR ANY SHARES OF COMMON STOCK ISSUABLE UPON THE EXERCISE OF THIS WARRANT HAVE BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR QUALIFIED UNDER APPLICABLE STATE SECURITIES LAWS. THIS WARRANT AND THE COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT MAY NOT BE OFFERED, SOLD, PLEDGED, HYPOTHECATED OR OTHERWISE TRANSFERRED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT AND QUALIFICATION IN EFFECT WITH RESPECT THERETO UNDER THE SECURITIES ACT AND UNDER ANY APPLICABLE STATE SECURITIES LAW OR AN OPINION OF PERMA-FIX ENVIRONMENTAL SERVICES, INC.'S COUNSEL THAT SUCH REGISTRATION AND QUALIFICATION IS NOT REQUIRED UNDER APPLICABLE FEDERAL AND STATE SECURITIES LAWS OR AN EXEMPTION THEREFROM IS AVAILABLE.

NOTWITHSTANDING THE FOREGOING, THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS SET FORTH IN THAT CERTAIN LETTER AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.

**COMMON STOCK PURCHASE WARRANT CERTIFICATE**

**7-01-9**

**Dated: July 9, 2001**

**1,839,405 Warrants**

**to Purchase 1,839,405**

**Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:00 P.M., UNITED STATES EASTERN DAYLIGHT SAVINGS TIME**

**on**

**July 9, 2006**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**, a Delaware corporation (the "Company"), hereby certifies that Capital Bank Grawe Gruppe, organized under the laws of Austria, and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time after July 9, 2001, until 5:00 p.m., Eastern Daylight Savings Time on July 9, 2006, up to an aggregate of **one million eight hundred thirty-nine thousand four hundred five (1,839,405)** shares (the "Shares" or "Warrant Shares") of the Company's common stock, par value \$.001

per share (the "Common Stock") at an exercise price equal to \$1.75 per share (the "Per Share Exercise Price").

1. **Cash Exercise of Warrants.** Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the attached Form of Election to Purchase duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32606-1649, together with cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased (the "Aggregate Exercise Price"), the Company, or the Company's transfer agent, as the case may be, shall deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. The purchase rights represented by each Warrant Certificate are exercisable at the option of the Holder thereof, in whole or in part (but not as to fractional shares of the Common Stock underlying the Warrants). Warrants may be exercised to purchase all or part of the shares of Common Stock represented thereby. In the case of the purchase of less than all the shares of Common Stock purchasable under any Warrant Certificate, the Company shall cancel said Warrant Certificate upon the surrender thereof and shall execute and deliver a new Warrant Certificate of like tenor for the balance of the shares of Common Stock purchasable thereunder.

2. **Definition of Market Price.** As used herein, the phrase "Market Price" at any date shall be deemed to be the average closing bid quotation of the Company's Common Stock (i) as reported on the National Association of Securities Dealers SmallCap Quotation market ("NASDAQ") for the last five (5) trading days, or (ii) if the Common Stock is not traded on NASDAQ, the average closing price as listed on a national securities exchange for the last five (5) trading days, or (iii) if no longer traded on NASDAQ or listed on a national securities exchange, as determined in good faith by resolution of the Board of Directors of the Company, based on the best information available to it.

3. **Exchange and Transfer.** This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Certificate or Certificates of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares as the Certificate or Certificates surrendered.

4. **Rights and Obligations of Warrant Holder of this Certificate.** The Holder of this Certificate shall not, by virtue hereof, be entitled to any rights of a shareholder in the Company, either at law or in equity; provided, however, that in the event any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder shall, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Form of Election to Purchase, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms

hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by his acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder, by accepting this Certificate, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner of this Certificate for all purposes whatsoever, and the Company shall not be affected by any notice to the contrary.

## **5. Common Stock.**

- 5.1 The Company covenants and agrees that all shares of Common Stock which may be acquired by the Holder under this Warrant Certificate will, when issued and upon delivery, be duly and validly authorized and issued, fully paid and nonassessable, and free from all stamp taxes, liens, and charges with respect to the purchase thereof.
- 5.2 The Company covenants and agrees that it will, at all times, reserve and keep available an authorized number of shares of its Common Stock and other applicable securities sufficient to permit the exercise in full of all outstanding options, warrants and rights, including the Warrants; and, if at the time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the exercise of all of the Warrants covered by this Warrant Certificate, the Company will take such corporate action at its next annual meeting of stockholders as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purpose, including, without limitation, engaging in reasonable efforts to obtain the requisite stockholder approval of any necessary amendment to its Certificate of Incorporation.

6. **Issuance of Certificates.** As soon as possible after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Per Share Exercise Price. All such certificates shall bear a restrictive legend to the effect that, subject to the provisions of Section 7 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended, or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration and qualification or an exemption thereof, such legend to be substantially in the form set forth in Section 7.2 of this Warrant Certificate.

-3-

## **7. Disposition of Warrants or Shares.**

- 7.1 The Holder of this Warrant Certificate, by its acceptance thereof, agrees that (a) no public distribution of Warrants or Shares will be made in violation of the provisions of the Securities Act of 1933, as amended, and the Rules and Regulations promulgated

thereunder (collectively, the "Act"), and (b) during such period as delivery of a prospectus with respect to Warrants or Shares may be required by the Act, no public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The holder of this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that any transferee thereof deliver to the Company his or its written agreement to accept and be bound by all of the terms and conditions contained in this Warrant Certificate.

7.2 By acceptance hereof, the Holder represents and warrants that this Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear a legend to the following effect:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities

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or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

8. **Warrant Holder Not Shareholder.** This Warrant Certificate shall not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

9. **Authorization and Approval.** The issuance of the Warrant Shares are subject to appropriate corporate, NASDAQ and regulatory authority approval.

10. **Anti-Dilution.**

- 10.1 If the Company at any time, or from time to time, while this Warrant Certificate is outstanding shall declare or pay, without consideration, any dividend on the Common Stock payable in Common Stock, or shall effect a subdivision of the outstanding shares of Common Stock into a greater number of shares of Common Stock (by stock split, reclassification or otherwise than by payment of a dividend in Common Stock or in any right to acquire Common Stock), or if the outstanding shares of Common Stock shall be combined or consolidated, by reclassification or otherwise, into a lesser number of shares of Common Stock, then the number of shares of Common Stock issuable upon the exercise of this Warrant Certificate or the Exercise Price shall be appropriately adjusted such that immediately after the happening of any such event, the proportionate number of shares of Common Stock issuable immediately prior to the happening of such event shall be the number of shares of Common Stock issuable subsequent to the happening of such event.
- 10.2 In case of any consolidation or merger of the Company in which the Company is not the surviving entity, or in case of any sale or conveyance by the Company to another entity of all or substantially all of the property of the Company as an entirety or substantially as an entirety, the Holder shall have the right thereafter, upon exercise of this Warrant, to receive the kind and amount of securities, cash or other property which the Holder would have owned or been entitled to receive immediately after such consolidation, merger, sale or conveyance had this Warrant been exercised in full immediately prior to the effective date of such consolidation, merger, sale or conveyance, and in any such case, if necessary, appropriate adjustment shall be made in the application thereafter of the provisions of this Section 10 with respect to the rights and interests of the Holder to the end that the provisions of this Section 10 thereafter shall be correspondingly applicable, as nearly as may be, to such securities and other property.

11. **Notices.** Except as otherwise specified herein to the contrary, all notices, requests, demands and other communications required or desired to be given hereunder shall only be effective if given in writing, by hand, by certified or registered mail, return receipt requested, postage prepaid, or by U. S. Express Mail service, or by private overnight mail service (e.g., Federal Express). Any such notice shall be deemed to have been given (a) on the business day actually received if given by hand or by fax, (b) on the business day immediately subsequent to mailing, if sent by U.S. Express Mail service or private overnight mail service, or (c) five (5) business days following the mailing thereof, if mailed by certified or registered mail, postage prepaid, return receipt requested, and all such notices shall be sent to the following addresses (or to such other address or addresses as a party may have advised the other in the manner

provided in this Section 11):

If to the Company: Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32653  
Attention: Dr. Louis F. Centofanti  
Chief Executive Officer  
Fax No.: (352) 373-0040

with copies simultaneously by like means to: Conner & Winters  
One Leadership Square, Suite 1700  
211 North Robinson  
Oklahoma City, Oklahoma 73102  
Attention: Irwin H. Steinhorn, Esquire  
Fax No.: (405) 232-2695

If to the Subscriber: Capital Bank Grawe Gruppe  
Burgring 16, 8010 Graz, Austria  
Attention: Herbert Strauss  
Fax No.: 011-43-316-8072, ext. 392

12. **Governing Law.** This Warrant Certificate and all rights and obligations hereunder shall be deemed to be made under and governed by the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

13. **Successors and Assigns.** This Warrant Certificate shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

14. **Headings.** The headings of various sections of this Warrant Certificate have been inserted for reference only and shall not be a part of this Agreement.

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**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of July 9, 2001.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By /s/ Louis Centofanti  
Dr. Louis F. Centofanti  
Chief Executive Officer

## **FORM OF ELECTION TO PURCHASE OR ASSIGN**

### **Election to Purchase**

The undersigned hereby irrevocably elects to exercise the right, represented by the foregoing Warrant Certificate, to receive \_\_\_\_\_ shares of the Common Stock. In payment of such shares, the undersigned herewith:

\_\_\_\_\_ tenders payment for such shares to the order of Perma-Fix Environmental Services, Inc. in the amount of \$\_\_\_\_\_ in accordance with the terms of the Warrant Agreement.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

### **Assignment**

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto \_\_\_\_\_ the foregoing Warrants and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental Services, Inc.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

### **Partial Assignment**

FOR VALUE RECEIVED, the undersigned hereby assigns and transfers \_\_\_\_\_  
Warrants and all rights evidenced under such part of the foregoing Warrants unto  
\_\_\_\_\_ and does irrevocably constitute and appoint  
\_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental  
Services, Inc.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_



NEITHER THIS WARRANT NOR ANY SHARES OF COMMON STOCK ISSUABLE UPON THE EXERCISE OF THIS WARRANT HAVE BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR QUALIFIED UNDER APPLICABLE STATE SECURITIES LAWS. THIS WARRANT AND THE COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT MAY NOT BE OFFERED, SOLD, PLEDGED, HYPOTHECATED OR OTHERWISE TRANSFERRED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT AND QUALIFICATION IN EFFECT WITH RESPECT THERETO UNDER THE SECURITIES ACT AND UNDER ANY APPLICABLE STATE SECURITIES LAW OR AN OPINION OF PERMA-FIX ENVIRONMENTAL SERVICES, INC.'S COUNSEL THAT SUCH REGISTRATION AND QUALIFICATION IS NOT REQUIRED UNDER APPLICABLE FEDERAL AND STATE SECURITIES LAWS OR AN EXEMPTION THEREFROM IS AVAILABLE.

NOTWITHSTANDING THE FOREGOING, THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS SET FORTH IN THAT CERTAIN LETTER AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.

**COMMON STOCK PURCHASE WARRANT CERTIFICATE**

**HS7-01-9**

**Dated: July 9, 2001**

**625,000 Warrants**

**to Purchase 625,000**

**Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:00 P.M., UNITED STATES EASTERN DAYLIGHT SAVINGS TIME**

**on**

**July 9, 2006**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**, a Delaware corporation (the "Company"), hereby certifies that Herbert Strauss, an Individual, and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time after July 9, 2001, until 5:00 p.m., Eastern Daylight Savings Time on July 9, 2006, up to an aggregate of **six hundred twenty-five thousand (625,000)** shares (the "Shares" or "Warrant Shares") of the Company's

common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.75 per share (the "Per Share Exercise Price").

1. **Cash Exercise of Warrants.** Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the attached Form of Election to Purchase duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32606-1649, together with cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased (the "Aggregate Exercise Price"), the Company, or the Company's transfer agent, as the case may be, shall deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. The purchase rights represented by each Warrant Certificate are exercisable at the option of the Holder thereof, in whole or in part (but not as to fractional shares of the Common Stock underlying the Warrants). Warrants may be exercised to purchase all or part of the shares of Common Stock represented thereby. In the case of the purchase of less than all the shares of Common Stock purchasable under any Warrant Certificate, the Company shall cancel said Warrant Certificate upon the surrender thereof and shall execute and deliver a new Warrant Certificate of like tenor for the balance of the shares of Common Stock purchasable thereunder.

2. **Definition of Market Price.** As used herein, the phrase "Market Price" at any date shall be deemed to be the average closing bid quotation of the Company's Common Stock (i) as reported on the National Association of Securities Dealers SmallCap Quotation market ("NASDAQ") for the last five (5) trading days, or (ii) if the Common Stock is not traded on NASDAQ, the average closing price as listed on a national securities exchange for the last five (5) trading days, or (iii) if no longer traded on NASDAQ or listed on a national securities exchange, as determined in good faith by resolution of the Board of Directors of the Company, based on the best information available to it.

3. **Exchange and Transfer.** This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Certificate or Certificates of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares as the Certificate or Certificates surrendered.

4. **Rights and Obligations of Warrant Holder of this Certificate.** The Holder of this Certificate shall not, by virtue hereof, be entitled to any rights of a shareholder in the Company, either at law or in equity; provided, however, that in the event any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder shall, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Form of Election to Purchase, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms

hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by his acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder, by accepting this Certificate, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner of this Certificate for all purposes whatsoever, and the Company shall not be affected by any notice to the contrary.

## **5. Common Stock.**

5.1 The Company covenants and agrees that all shares of Common Stock which may be acquired by the Holder under this Warrant Certificate will, when issued and upon delivery, be duly and validly authorized and issued, fully paid and nonassessable, and free from all stamp taxes, liens, and charges with respect to the purchase thereof.

5.2 The Company covenants and agrees that it will, at all times, reserve and keep available

an authorized number of shares of its Common Stock and other applicable securities sufficient to permit the exercise in full of all outstanding options, warrants and rights, including the Warrants; and, if at the time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the exercise of all of the Warrants covered by this Warrant Certificate, the Company will take such corporate action at its next annual meeting of stockholders as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purpose, including, without limitation, engaging in reasonable efforts to obtain the requisite stockholder approval of any necessary amendment to its Certificate of Incorporation.

6. **Issuance of Certificates.** As soon as possible after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Per Share Exercise Price. All such certificates shall bear a restrictive legend to the effect that, subject to the provisions of Section 7 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended, or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration and qualification or an exemption thereof, such legend to be substantially in the form set forth in Section 7.2 of this Warrant Certificate.

## **7. Disposition of Warrants or Shares.**

7.1 The Holder of this Warrant Certificate, by its acceptance thereof, agrees that (a) no public distribution of Warrants or Shares will be made in violation of the provisions of the Securities Act of 1933, as amended, and the Rules and Regulations promulgated thereunder (collectively, the "Act"), and (b) during such period as delivery of a prospectus with respect to Warrants or Shares may be required by the Act, no public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The holder of this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that any transferee thereof deliver to the Company his or its written agreement to accept and be bound by all of the terms and conditions contained in this Warrant Certificate.

7.2 By acceptance hereof, the Holder represents and warrants that this Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear a legend to the following effect:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an

opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

8. **Warrant Holder Not Shareholder.** This Warrant Certificate shall not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

9. **Authorization and Approval.** The issuance of the Warrant Shares are subject to appropriate corporate, NASDAQ and regulatory authority approval.

10. **Anti-Dilution.**

- 10.1 If the Company at any time, or from time to time, while this Warrant Certificate is outstanding shall declare or pay, without consideration, any dividend on the Common Stock payable in Common Stock, or shall effect a subdivision of the outstanding shares of Common Stock into a greater number of shares of Common Stock (by stock split, reclassification or otherwise than by payment of a dividend in Common Stock or in any right to acquire Common Stock), or if the outstanding shares of Common Stock shall be combined or consolidated, by reclassification or otherwise, into a lesser number of shares of Common Stock, then the number of shares of Common Stock issuable upon the exercise of this Warrant Certificate or the Exercise Price shall be appropriately adjusted such that immediately after the happening of any such event, the proportionate number of shares of Common Stock issuable immediately prior to the happening of such event shall be the number of shares of Common Stock issuable subsequent to the happening of such event.
- 10.2 In case of any consolidation or merger of the Company in which the Company is not the surviving entity, or in case of any sale or conveyance by the Company to another entity of all or substantially all of the property of the Company as an entirety or substantially as an entirety, the Holder shall have the right thereafter, upon exercise of this Warrant, to receive the kind and amount of securities, cash or other property which the Holder would have owned or been entitled to receive immediately after such consolidation, merger, sale or conveyance had this Warrant been exercised in full immediately prior to the effective date of such consolidation, merger, sale or conveyance, and in any such case, if necessary, appropriate adjustment shall be made in the application thereafter of the provisions of this Section 10 with respect to the rights and interests of the Holder to the end that the provisions of this Section 10 thereafter shall be correspondingly applicable, as nearly as may be, to such securities and other property.

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11. **Notices.** Except as otherwise specified herein to the contrary, all notices, requests, demands and other communications required or desired to be given hereunder shall only be effective if given in writing, by hand, by certified or registered mail, return receipt requested, postage prepaid, or by U. S. Express Mail service, or by private overnight mail service (e.g., Federal Express). Any such notice shall be deemed to have been given (a) on the business day actually received if given by hand or by fax, (b) on the business day immediately subsequent to mailing, if sent by U.S. Express Mail service or private overnight mail service, or (c) five (5) business days following the mailing thereof, if mailed by certified or registered mail, postage prepaid, return receipt requested, and all such notices shall be sent to the following addresses (or to such other address or addresses as a party may have advised the other in the manner

provided in this Section 11):

If to the Company: Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32653  
Attention: Dr. Louis F. Centofanti  
Chief Executive Officer  
Fax No.: (352) 373-0040

with copies simultaneously by like means to: Conner & Winters  
One Leadership Square, Suite 1700  
211 North Robinson  
Oklahoma City, Oklahoma 73102  
Attention: Irwin H. Steinhorn, Esquire  
Fax No.: (405) 232-2695

If to the Subscriber: Herbert Strauss  
c/o Capital Bank Grawe Gruppe  
Burgring 16, 8010 Graz, Austria  
Fax No.: 011-43-316-8072, ext. 392

12. **Governing Law.** This Warrant Certificate and all rights and obligations hereunder shall be deemed to be made under and governed by the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

13. **Successors and Assigns.** This Warrant Certificate shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

14. **Headings.** The headings of various sections of this Warrant Certificate have been inserted for reference only and shall not be a part of this Agreement.

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**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of July 9, 2001.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By /s/ Louis Centofanti  
Dr. Louis F. Centofanti  
Chief Executive Officer

## FORM OF ELECTION TO PURCHASE OR ASSIGN

### Election to Purchase

The undersigned hereby irrevocably elects to exercise the right, represented by the foregoing Warrant Certificate, to receive \_\_\_\_\_ shares of the Common Stock. In payment of such shares, the undersigned herewith:

\_\_\_\_\_ tenders payment for such shares to the order of Perma-Fix Environmental Services, Inc. in the amount of \$\_\_\_\_\_ in accordance with the terms of the Warrant Agreement.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

### Assignment

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto \_\_\_\_\_ the foregoing Warrants and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental Services, Inc.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

### Partial Assignment

FOR VALUE RECEIVED, the undersigned hereby assigns and transfers \_\_\_\_\_ Warrants and all rights evidenced under such part of the foregoing Warrants unto \_\_\_\_\_ and does irrevocably constitute and appoint \_\_\_\_\_

\_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental Services, Inc.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_



**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER THE ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO THE COMPANY TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.**

## **PERMA-FIX ENVIRONMENTAL SERVICES, INC.**

### **Common Stock Purchase Warrant Certificate**

**No. 04-01-99A**

**Dated: April 1, 1999**

**Two Hundred and Forty Thousand (240,000) Warrants**

**to Purchase Two Hundred and Forty Thousand (240,000)**

**Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:00 P.M., UNITED STATES EASTERN STANDARD TIME**

**on**

**April 1, 2003**

**FOR VALUE RECEIVED, PERMA-FIX ENVIRONMENTAL SERVICES, INC.,** a Delaware corporation (the "Company"), hereby certifies that Strategic Growth International, Inc., or any permitted assignee thereof (the "Holder"), is entitled to purchase from the Company, at any time in whole, or from time to time in part, during the period commencing from the date of this Warrant and ending at 5:00 p.m. Eastern Standard Time on April 1, 2003 (the "Exercise Period"), up to two hundred and forty thousand (240,000) fully paid and non-assessable shares of the Company's common stock, par value \$.001 per share ("Common Stock"), at a purchase price of \$1.20 per share; provided, however, that the number of shares of Common Stock to be issued and delivered by the Company upon any exercise of this Warrant and the purchase price to be paid for each share shall be subject to adjustments from time to time as hereinafter provided in this Warrant.

1. **Exercise of Warrant and Shareholder Approval.** This Warrant may be exercised, as a whole at any one time or in part from time to time, during the Exercise Period, by the Holder by the surrender of this

Warrant (with the subscription form at the end hereof duly executed by the Holder) at the address set forth in

Section 9 hereof, together with payment in the manner hereinafter set forth, of an amount equal to the Warrant Price in effect at the date of such exercise multiplied by the total number of Warrant Shares to be purchased upon such exercise. Payment for Warrant Shares shall be made by a cashier's or certified check or money order, payable in New York Clearing House funds, to the order of the Company. If this Warrant is exercised in part, such exercise shall be for a whole number of Warrant Shares and the Holder shall be entitled to receive a new Warrant covering the number of Warrant Shares in respect of which this Warrant has not been exercised. Upon any exercise and surrender of this Warrant, the Company (a) will issue and deliver to the Holder a certificate or certificates in the name of the Holder for the largest whole number of Warrant Shares to which the Holder shall be entitled and, if this Warrant is exercised in whole, in lieu of any fractional Warrant Share to which the Holder otherwise might be entitled, cash in an amount equal to the fair value of such fractional share (determined in such reasonable manner as the Board of Directors of the Company shall determine), and (b) will deliver to the Holder such other securities and properties which the Holder may be entitled to receive upon such exercise, or the proportionate part thereof if this Warrant is exercised in part, pursuant to the provisions of this Warrant.

## **2. Reservation of Warrant Shares.**

- 2.1 The Company covenants and agrees that all Warrant Shares which may be acquired by the Holder under this Warrant will, when issued and upon delivery, be duly and validly authorized and issued, fully paid and non-assessable, and free from all restrictions on the sale or transfer thereof, except such restrictions as may be imposed under applicable federal and state securities laws and applicable exchange on which the Common Stock may be listed, and free and clear of all preemptive rights.
- 2.2 The Company covenants and agrees that it will, at all times, reserve and keep available an authorized number of shares of its Common Stock and other applicable securities sufficient to permit the exercise in full of this Warrant; and, if at the time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the exercise of this Warrant, the Company will take such corporate action at its next annual meeting of stockholders as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purpose, including, without limitation, engaging in reasonable efforts to obtain the requisite stockholder approval of any necessary amendment to its Certificate of Incorporation.

## **3. Protection Against Dilution.**

- 3.1 If the Company at any time, or from time to time, while this Warrant Certificate is outstanding shall declare or pay, without consideration, any dividend on the Common Stock payable in Common Stock, or shall effect a subdivision of the outstanding shares of Common Stock into a greater number of shares of Common Stock (by stock split, reclassification or otherwise than by payment of a dividend in Common Stock or in any right to acquire Common Stock), or if the outstanding shares of Common Stock shall

be combined or consolidated, by reclassification or otherwise, into a lesser number of shares of Common Stock, then the number of shares of Common Stock issuable upon the exercise of this Warrant Certificate or the Exercise Price shall be appropriately

adjusted such that immediately after the happening of any such event, the proportionate number of shares of Common Stock issuable immediately prior to the happening of such event shall be the number of shares of Common Stock issuable subsequent to the happening of such event.

- 3.2 In case of any consolidation or merger of the Company in which the Company is not the surviving entity, or in case of any sale or conveyance by the Company to another entity of all or substantially all of the property of the Company as an entirety or substantially as an entirety, the Holder shall have the right thereafter, upon exercise of this Warrant, to receive the kind and amount of securities, cash or other property which the Holder would have owned or been entitled to receive immediately after such consolidation, merger, sale or conveyance had this Warrant been exercised in full immediately prior to the effective date of such consolidation, merger, sale or conveyance, and in any such case, if necessary, appropriate adjustment shall be made in the application thereafter of the provisions of this Section 3.2 with respect to the rights and interests of the Holder to the end that the provisions of this Section 3.2 thereafter shall be correspondingly applicable, as nearly as may be, to such securities and other property.

4. **Fully Paid Stock; Taxes.** The Company agrees that the shares of the Common Stock represented by each and every certificate for Warrant Shares delivered upon the exercise of this Warrant shall, at the time of such delivery, be validly issued and outstanding, fully paid and non-assessable, and not subject to preemptive rights, and the Company will take all such actions as may be necessary to assure that the par value or stated value, if any, per share of the Common Stock is at all times equal to or less than the Warrant Price. The Company further covenants and agrees that it will pay, when due and payable, any and all federal and state stamp, original issue or similar taxes which may be payable in respect of the issuance of any Warrant Share or certificate therefor.

5. **Investment Representation and Transferability.**

- 5.1 By acceptance hereof, the Holder represents and warrants that this Warrant is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant will be acquired, by the Holder solely for the account of such Holder, and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Securities Act of 1933, as amended (the "Act") and the rules and regulations of the Commission promulgated thereunder. The Holder covenants and agrees that this Warrant and the Warrant Shares will not be sold or transferred except under cover of a Registration Statement under the Act which the Commission has declared effective and the applicable state securities laws and which is current with respect to such Warrant and the Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the

Company that registration under the Act and the applicable state securities laws is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear the following legend:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended, and are restricted securities within the meaning thereof. Such securities may not be sold or transferred except pursuant to a Registration Statement under such Act and applicable state securities laws which is effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that such sale or transfer is exempt from the registration requirements of such Act.

- 5.2 The Holder agrees that the Company may refuse to permit the sale, transfer or disposition of this Warrant or any of the Warrant Shares unless there is in effect a Registration Statement under the Act and any applicable state securities law covering such transfer or the Holder furnishes an opinion of counsel, reasonably satisfactory to counsel for the Company, to the effect that such registration is not required.
- 5.3 The Holder understands that under the Act, this Warrant and the Warrant Shares must be held indefinitely unless they are subsequently registered under the Act or unless an exemption from such registration is available with respect to any proposed transfer or disposition of the Warrant or the Warrant Shares.
6. **Loss, etc. of Warrant.** Upon receipt of evidence satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant, and of indemnity reasonably satisfactory to the Company, if lost, stolen or destroyed, and upon surrender and cancellation of this Warrant, if mutilated, and upon reimbursement of the Company's reasonable incidental expenses, the Company shall execute and deliver to the Holder a new Warrant of like date, tenor and denomination.
7. **Warrant Holder Not Shareholder.** This Warrant shall not be deemed to confer upon the Holder any right to vote or to consent to or receive notice as a shareholder of the Company, as such, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder, prior to the exercise hereof.
8. **Piggyback Registration Rights.** Subject to the terms of this section 8, if, at any time during the Exercise Period, the Company proposes to register any of its equity securities under the Act (other than a registration statement (i) on Form S-8 or any successor form or in connection with any employee or director welfare, benefit or compensation plan, (ii) on Form S-4 or any successor form to such form or in connection with any merger, consolidation, acquisition or exchange offer, (iii) in connection with a rights offering exclusively to existing holders of

Common Stock, (iv) in connection with an offering solely to employees of the Company or its subsidiaries, or (v) relating to a transaction pursuant to Rule 145 of the Act), it will give written notice by registered mail, at least thirty (30) days prior to the filing of each such registration statement, to the Holder of its intention to do so. If Holder notifies the

Company within twenty (20) days after receipt of any such notice of its desire to include any Warrant shares held by such Holder or Warrant shares underlying Warrants held by such Holder in such proposed registration statement, the Company shall afford any such Holder of the opportunity to have any such Warrant shares held by such Holder or Warrant shares underlying Warrants held by such Holder, registered under such registration statement (sometimes referred to herein as the "Piggyback Registration").

Notwithstanding the provisions of this Section 8, the Company shall have the right at any time after it shall have given written notice pursuant to this Section 8 (irrespective of whether a written request for inclusion of any such securities shall have been made) to elect not to file any such proposed registration statement, or to withdraw the same after the filing but prior to the effective date thereof.

If a Piggyback Registration is an underwritten primary registration on behalf of the Company, and the managing underwriters advise the Company in writing that in their reasonable opinion based upon market conditions the number of securities requested to be included in such registration exceeds the number that can be sold in such offering or would impair the pricing of such offering, the Company will include in such registration (i) first, the securities the Company proposes to sell, (ii) second, up to the full number of applicable Common Stock requested to be included in such registration by holders of Common Stock with prior or superior piggyback registration rights, (iii) third, the number of applicable total Warrant shares requested to be included in such registration, pro rata among the Holders of the Warrant Agreements on the basis of the number of shares requested by such Holders of the Warrant Agreements to be included and which, in the opinion of the managing underwriter, can be sold without adversely affecting the price range or probability of success of such offering, and (iv) fourth, other securities to be included in such registration.

9. **Notices.** Except as otherwise specified herein to the contrary, all notices, requests, demands and other communications required or desired to be given hereunder shall only be effective if given in writing, by hand or fax, by certified or registered mail, return receipt requested, postage prepaid, or by U. S. Express Mail service, or by private overnight mail service (e.g., Federal Express). Any such notice shall be deemed to have been given (a) on the business day actually received if given by hand or by fax, (b) on the business day immediately subsequent to mailing, if sent by U.S. Express Mail service or private overnight mail service, or (c) five (5) business days following the mailing thereof, if mailed by certified or registered mail, postage prepaid, return receipt requested, and all such notices shall be sent to the following addresses (or to such other address or addresses as a party may have advised the other in the manner provided in this Section 9) to:

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If to the Company:

Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32606-1649  
Attention: Dr. Louis F. Centofanti  
Chief Executive Officer

If to the Holder: Strategic Growth International, Inc.  
111 Great Neck Road, Suite 606  
Great Neck, NY 11021-5402  
Attention: Stan Altschuler  
Fax No.: (516) 829-8319

10. **Headings.** The headings of this Warrant have been inserted as a matter of convenience and shall not affect the construction hereof.
11. **Applicable Law.** This Warrant shall be governed by, and construed in accordance with, the laws of the State of Delaware, without giving effect to the principles of conflicts of law thereof.

**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of April 1, 1999

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By \_\_\_\_\_  
Dr. Louis F. Centofanti  
Chief Executive Officer

**(the "Company")**

STRATEGIC GROWTH INTERNATIONAL, INC.

By \_\_\_\_\_  
Stan Altschuler

**(the "Holder")**

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**SUBSCRIPTION**

The undersigned, \_\_\_\_\_, pursuant to the provisions of the attached Warrant, hereby irrevocably elects to subscribe for and purchase \_\_\_\_\_ shares of the Common Stock of PERMA-FIX ENVIRONMENTAL SERVICES, INC., covered by said Warrant, and hereby tenders payment by delivery of \$\_\_\_\_\_ in cash or by certified or official bank check for the exercise price per share required under the Warrant which accompanies this notice.

Dated: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
Tax Identification or  
Social Security Number \_\_\_\_\_

### **ASSIGNMENT**

FOR VALUE RECEIVED, \_\_\_\_\_ hereby sells, assigns and transfers unto \_\_\_\_\_ the foregoing Warrant and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer said Warrant on the books of PERMA-FIX ENVIRONMENTAL SERVICES, INC.

Dated: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
Tax Identification or  
Social Security Number \_\_\_\_\_

### **PARTIAL ASSIGNMENT**

FOR VALUE RECEIVED, \_\_\_\_\_ hereby sells, assigns and transfers unto \_\_\_\_\_ the right to purchase \_\_\_\_\_ shares of the Common Stock of PERMA-FIX ENVIRONMENTAL SERVICES, INC. by the foregoing Warrant and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer that part of said Warrant on the books of PERMA-FIX ENVIRONMENTAL SERVICES, INC.

Dated: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
Tax Identification or  
Social Security Number \_\_\_\_\_

THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.

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PERMA-FIX ENVIRONMENTAL SERVICES, INC.

RYAN, BECK & CO., INC.

WARRANT AGREEMENT

Dated as of January 25, 2000

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WARRANT AGREEMENT, dated as of January 25, 2000 (the "Agreement"), by and between PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Company") and RYAN, BECK & CO., INC. ("Ryan Beck" or "Holder").

W I T N E S S E T H:

WHEREAS, the Company proposes to issue to the Holder, or subject to the terms hereof, those permitted designees, warrants ("Warrants") to purchase up to an aggregate 33,750 shares of common stock of the Company, par value \$.001 per share ("Common Stock");

WHEREAS, this Agreement is one of nine warrant agreements (collectively, the "Warrant Agreements") issued by the Company to Ryan Beck, Larkspur Capital Corporation ("Larkspur") and certain of their officers and/or directors, with all such Warrant Agreements dated as of January 25, 2000, allowing the holders (collectively, the "Holders of the Warrant Agreements") under all of the Warrant Agreements to purchase up to an aggregate of 150,000 shares of Common Stock (the "Total Warrant Shares"), pursuant to the terms of a letter agreement, dated January 25, 2000 (the "Letter Agreement"), among the Company, Ryan Beck and Larkspur, whereby Ryan Beck and Larkspur have agreed to provide certain financial services to the Company;

WHEREAS, the Company proposes to issue the Warrants to the Holder and enter into all of the Warrant Agreements, as a part of the retainer for the services to be provided under the Letter Agreement;



WHEREAS, the Holder is an "accredited investor," as such term is defined in Rule 501 of Regulation D promulgated under the Securities Act of 1933, as amended (the "Act");

WHEREAS, if the Holder designates any other party as a designee for the purpose of receiving any portion of the Warrants pursuant to the terms hereof, then, prior to receiving any of the Warrants as designee of the Holder, such designee must execute and deliver to the Company a written certification ("Certification"), the form and content of which must be satisfactory to the Company, in which such designee represents to the Company that such designee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such designee is an accredited investor, and that such designee is acquiring such designated Warrants for the designees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the designee;

WHEREAS, the Common Stock is listed for trading on the Boston Stock Exchange and the National Association of Securities Dealers Automated Quotation SmallCap market ("NASDAQ"), and the Company is subject to the reporting requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and has been subject to such filing requirements for the past ninety (90) days; and

WHEREAS, in reliance upon the representations made by the Holder in this Agreement and the Holders of the Warrant Agreements in all of the other Warrant Agreements, the transactions contemplated by this Agreement and all of the Warrant Agreements, are such that the offer and purchase of securities hereunder will be exempt from registration under applicable federal securities laws because this is a private placement and intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Securities Act and/or Regulation D promulgated under the Act.

NOW, THEREFORE, in consideration of the premises, the payment by Ryan Beck and Larkspur to the Company of an aggregate of twelve dollars and fifty cents (\$12.50), the agreements herein set forth and other good and valuable consideration, hereby acknowledged, the parties hereto agree as follows:

1. Grant. The Holder is hereby granted Warrants providing the right to purchase, at any time and from the date hereof until 5:30 p.m., New York time, on January 25, 2005, up to an aggregate of 33,750 shares of Common Stock (the "Warrant Shares") at an initial exercise price (subject to adjustment as provided in Section 11 hereof) of \$1.44 per share of Common Stock subject to the terms and conditions of

this Agreement. Except as set forth herein, the Warrant Shares issuable upon exercise of the Warrants are in all respects identical to the shares of Common Stock that have been issued to the public. Anything to the contrary notwithstanding, the Company shall have the right to cancel 50% of the Warrants issued and then outstanding, on a pro rata basis among the registered

holders of the Warrants thereof, in the event that no Transaction (as defined in the Letter Agreement) shall have occurred within one year from the date hereof. In the event any registered holder of the Warrants holds an odd number of Warrants at the time of cancellation of 50% of the Warrants issued and then outstanding by the Company, the number of Warrants held by such registered holder of the Warrants which are canceled shall be rounded up to the next highest whole number.

2. Warrant Certificate. The warrant certificates (the "Warrant Certificate") delivered and to be delivered pursuant to this Agreement shall be in the form set forth in Exhibit A, attached hereto and made a part hereof, with such appropriate insertions, omissions, substitutions, and other variations as required or permitted by this Agreement. There shall be two Warrant Certificates issued to the Holder hereunder, the first in the amount of 30,000 Warrants and the second in the amount of 3,750 Warrants.

3. Representations, Warranties and Covenants of Holder. The Holder of Warrants and/or Warrant Shares hereby represents, warrants and covenants to the Company as follows:

3.1 Investment Intent. The Holder represents and warrants that the Warrants are being, and any underlying Warrant Shares will be, purchased or acquired solely for such Holder's own account, for investment purposes only and not with a view toward the distribution or resale to others. The Holder acknowledges and understands that neither the Warrants nor Warrant Shares have been registered under the Act by reason of a claimed exemption under the provisions of the Act which depends, in large part, upon the Holder's representations as to investment intention, investor status, and related and other matters set forth herein. The Holder understands that, in the view of the Securities and Exchange Commission (the "Commission"), among other things, a purchase with an intent to distribute or resell would represent a purchase and acquisition with an intent inconsistent with its representation to the Company, and the Commission might regard such a transfer as a deferred sale for which the registration exemption is not available.

3.2 Certain Risk. The Holder recognizes that the purchase of the Warrants or Warrant Shares involves a high degree of risk in that (a) although the Company has had an unaudited net income for the nine month period ended September 30, 1999, the Company did sustain losses through December 31, 1998, from its operations, and may require substantial funds for its operations; (b) that the Company has a substantial accumulated deficit; (c) an investment in the Company is highly

speculative and only investors who can afford the loss of their entire investment should consider investing in the Company and the Warrants or Warrant Shares; (d) an investor may not be able to liquidate his investment; (e) transferability of the Warrants or Warrant Shares is extremely limited; (f) in the event of a disposition an investor could sustain the loss of his entire investment; (g) the Warrants represent non-voting equity securities, and the right to exercise such Warrants and purchase shares of voting equity securities in a corporate entity that has an accumulated deficit; (h) no return on investment, whether through distributions, appreciation, transferability or otherwise, and no performance by, through or of the Company, has been promised, assured, represented or warranted by the Company, or by any director, officer, employee, agent or representative thereof; and, (i) while the Common Stock is presently quoted and traded on the Boston Stock Exchange and the NASDAQ and while the Holder is a beneficiary of certain registration rights provided herein, the Warrants subscribed for and that are purchased under this Agreement and the Warrant Shares (a) are not registered under applicable federal or state securities laws, and thus may not be sold, conveyed, assigned or transferred unless registered under such laws or unless an exemption from registration is available under such laws, as more fully described herein, and (b) the Warrants subscribed for and that are to be purchased under this Agreement are not quoted, traded or listed for trading or quotation on the NASDAQ, or any other organized market or quotation system, and there is therefore no present public or other market for the Warrants, nor can there be any assurance that the Common Stock will continue to be quoted, traded or listed for trading or quotation on the Boston Stock Exchange or the NASDAQ or on any other organized market or quotation system.

3.3 Prior Investment Experience. The Holder acknowledges that Holder has prior investment experience, including investment in non-listed and non-registered securities, or Holder has employed the services of an investment advisor, attorney or accountant to read all of the documents furnished or made available by the Company to them and to evaluate the merits and risks of such an investment on Holder's behalf, and that Holder recognizes the highly speculative nature of this investment.

3.4 No Review by the Commission. The Holder hereby acknowledges that this offering of the Warrants has not been reviewed by the Commission because this private placement is intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Act and/or Regulation D promulgated under the Act.

3.5 Not Registered. The Holder understands that the Warrants and the Warrant Shares have not been registered under the Act by reason of a claimed exemption under the

provisions of the Act which depends, in part, upon the Holder's investment intention. In this connection, the Holder understands that it is the position of the Commission that the statutory basis for such exemption would not be present if Holder's representations merely meant that Holder's intention was to hold such securities for a short period, such as the capital gains period of tax statutes, for a deferred sale, for a market rise (assuming that a market develops), or for any other fixed period.

- 3.6 No Public Market. The Holder understands that there is no public market for the Warrants. The Holder understands that although there is presently a public

market

for the Common Stock, including the Warrant Shares, Rule 144 (the "Rule") promulgated under the Act requires, among other conditions, a one-year holding period following full payment of the consideration therefor prior to the resale (in limited amounts) of securities acquired in a nonpublic offering without having to satisfy the registration requirements under the Act. The Holder understands that the Company makes no representation or warranty regarding its fulfillment in the future of any reporting requirements under the Exchange Act, or its dissemination to the public of any current financial or other information concerning the Company, as is required by the Rule as one of the conditions of its availability. The Holder understands and hereby acknowledges that the Company is under no obligation to register the Warrants or the Warrant Shares under the Act, except as set forth in Section 10 hereof.

- 3.7 Sophisticated Investor. The Holder (a) has adequate means of providing for the Holder's current financial needs and possible contingencies and has no need

for

liquidity of the Holder's investment in the Warrants; (b) is able to bear the economic risks inherent in an investment in the Warrants and understands that an important consideration bearing on Holder's ability to bear the economic risk of the purchase of Warrants is whether the Holder can afford a complete loss of the Holder's investment in the Warrants and the Holder represents and warrants that the Holder can afford such a complete loss; and (c) has such knowledge and experience in business, financial, investment and banking matters (including, but not limited to, investments in restricted, non-listed and non-registered securities) that the Holder is capable of evaluating the merits, risks and advisability of an investment in the Warrants.

- 3.8 Tax Consequences. The Holder acknowledges that the Company has made no representation regarding the potential or actual tax consequences for the Holder which will result from entering into the Agreement. The Holder acknowledges

that

the Holder bears complete responsibility for obtaining adequate tax advice regarding the Agreement.

3.9 Commission Filing. The Holder acknowledges that Holder has been previously furnished with true and complete copies of the following documents which have been filed with the Commission pursuant to Sections 13(a), 14(a), 14(c) or 15(d) of the Exchange Act, and that such have been furnished to the Holder a reasonable time prior to the date hereof: (i) Annual Report on Form 10-K for the year ended December 31, 1998 (the "Form 10-K"), as may be amended; (ii) the Company's Proxy Statement delivered to shareholders on or about November 10, 1999; and (iii) the information contained in any reports or documents required to be filed by the Company under Sections 13(a), 14(a), 14(c) or 15(d) of the Exchange Act since the distribution of the Form 10-K.

3.10 Documents, Information and Access. The Holder's decision to purchase the Warrants are not based on any promotional, marketing or sales materials, and

the

Holder and the Holder's representatives have been afforded, prior to purchase thereof, the opportunity to ask questions of, and to receive answers from, the Company and its management, and has had access to all documents and information which Holder deems material to an investment decision with respect to the purchase of Warrants hereunder.

3.11 No Commission. The Holder agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the subscription described hereunder.

3.12 Accredited Investor. The Holder is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act as follows:

3.12.1 Natural Person. If the Holder is a natural person, such person (i) has an individual net worth, or joint net worth with such person's spouse at the time of the purchase described hereunder, in excess of \$1,000,000 or (ii) had individual income in excess of \$200,000 in each of the two most recent years or joint income with such person's spouse in excess of \$300,000 in each of those years and has a reasonable expectation of reaching the same income level in the current year.

3.12.2 Corporation. If the Holder is a corporation, such corporation has total assets in excess of \$5,000,000 and was not formed for the specific purpose of acquiring the Warrants or the Warrant Shares.

3.12.3 Trust. If the Holder is a trust, such must be (i) a revocable or grantor trust and each person with the power to revoke the trust must qualify as an accredited investor under Section 3.12.1 or 3.12.2 above and/or (ii) a trust

purpose of acquiring the securities offered and whose purchase is directed by a sophisticated person as described in Section Section 3.7 hereof.

3.13 Reliance. The Holder understands and acknowledges that the Company is relying upon all of the representations, warranties, covenants, understandings, acknowledgments and agreements contained in this Agreement in determining whether to accept this subscription and to sell and issue the Warrants to the Holder.

3.14 Accuracy or Representations and Warranties. All of the representations, warranties, understandings and acknowledgments that Holder has made herein are true and correct in all material respects as of the date of execution hereof. The Holder will perform and comply fully in all material respects with all covenants and agreements set forth herein, and the Holder covenants and agrees that until the acceptance of this Agreement by the Company, the Holder shall inform the Company immediately in writing of any changes in any of the representations or warranties provided or contained herein.

4. Representations, Warranties and Covenants of the Company. In order to induce Holder to enter into this Agreement, the Company hereby represents, warrants and covenants to Holder as follows:

4.1 Organization, Authority, Qualification. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Delaware. The Company has full corporate power and authority to own and operate its properties and assets and to conduct and carry on its business as it is now being conducted and operated.

4.2 Authorization. The Company has full power and authority to execute and deliver this Agreement and to perform its obligations under and consummate the transactions contemplated by this Agreement. Upon the execution of this Agreement by the Company and delivery of the Warrants, this Agreement shall have been duly and validly executed and delivered by the Company and shall constitute the legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms.

4.3 No Commission. The Company agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the issuance of the Warrants.

4.4 Ownership of, and Title to, Securities. The Warrant Shares, if issued, will be, duly authorized, validly issued, fully paid and nonassessable shares of the capital stock of the Company, free of personal liability. Upon consummation of the issuance of the Warrants (and upon the exercise of the Warrants, in whole or in part) pursuant to this Agreement, the Holder will own and acquire title to the Warrants (and the Warrant Shares, as the case may be) free and clear of any and all proxies, voting trusts, pledges, options, restrictions, or other legal or equitable encumbrance of any nature whatsoever (other than the restrictions on transfer due to federal and state securities laws or as otherwise provided for in this Agreement or in the Warrants).

## 5. Exercise of Warrant.

5.1 Method of Exercise. Subject to the terms hereof, the Warrants initially are exercisable at an aggregate initial exercise price per share of Common Stock set forth in Section 9.1 hereof payable by certified or cashier's check in New York Clearing House funds, subject to adjustment as provided in Section 11 hereof. Upon surrender of a Warrant Certificate with the annexed Form of Election to Purchase duly executed, together with payment of the Exercise Price (as hereinafter defined) for the shares of Common Stock purchased pursuant to the terms hereof, at the Company's principal offices (presently located at 1940 NW 67<sup>th</sup> Place, Gainesville, FL 32653) the Holder shall be entitled to receive a certificate or certificates for the shares of Common Stock so purchased. The purchase rights represented by each Warrant Certificate are exercisable at the option of the Holder thereof, in whole or in part (but not as to fractional shares of the Common Stock underlying the Warrants). Warrants may be exercised to purchase all or part of the shares of Common Stock represented thereby. In the case of the purchase of less than all the shares of Common Stock purchasable under any Warrant Certificate, the Company shall cancel said Warrant Certificate upon the surrender thereof and shall execute and deliver a new Warrant Certificate of like tenor for the balance of the shares of Common Stock purchasable thereunder.

5.2 Exercise by Surrender of Warrants. In addition to the method of payment set forth in Section 5.1 and in lieu of any cash payment required thereunder, subject to the terms hereof, the Holder of the Warrants shall have the right at any time and from time to time to exercise the Warrants held by such Holder in full or in part by surrendering a Warrant Certificate in the manner specified in Section 5.1 in exchange for the number of Warrant Shares equal to the product of (x) the number of Warrant Shares as to which the Warrants are being exercised multiplied by (y) a fraction, the numerator of which is the Market Price (as defined in Section 5.3 below) of the Warrant Shares less the Exercise Price and the denominator of which is such Market Price. Solely for the purposes of this paragraph, Market Price shall be calculated as the average of the Market Prices for each of the five trading days preceding the Notice Date.

5.3 Definition of Market Price. As used herein, the phrase "Market Price" at any date shall be deemed to be the average closing bid quotation of the Company's Common Stock (i) as reported on the NASDAQ for the last five (5) trading days, or (ii) if the Common Stock is not traded on NASDAQ, the

average closing price as listed on a national securities exchange for the last five (5) trading days, or (iii) if no longer traded on NASDAQ or listed on a national securities exchange, as determined in good faith by resolution of the Board of Directors of the Company, based on the best information available to it.

6. Issuance of Certificates. Upon the exercise of the Warrants or any portion thereof, the issuance of certificates for the Warrant Shares underlying such Warrants so exercised, shall be made forthwith (and in any event within five (5) business days thereafter) without charge to the Holder exercising such Warrants, including, without limitation, any tax which may be payable in respect of the issuance thereof, and such certificates shall be issued in the name of the Holder thereof.

The Warrants and the certificates representing the Warrant Shares shall be executed on behalf of the Company by the manual or facsimile signature of the then Chairman or Vice Chairman of the Board of Directors or President or Vice President of the Company.

7. Restriction on Transfer of Warrants or Warrant Shares. The Holder, by such Holder's acceptance hereof, covenants and agrees that the Warrants are being acquired as an investment and not with a view to the distribution thereof. The Holder, by such Holder's acceptance thereof, agrees that (i) no public

distribution of Warrants or Warrant Shares will be made in violation of the provisions of the Act and the Rules and Regulations promulgated thereunder and (ii) during such period as delivery of a prospectus with respect to Warrants or Warrant Shares may be required by the Act, no public distribution of Warrants or Warrant Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The Holder and each permitted transferee thereof further agrees that if any distribution of any of the Warrants or Warrant Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, or an opinion of counsel reasonably satisfactory to the Company, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that any transferee thereof deliver to the Company his or its written agreement to accept and be bound by all of the terms and conditions contained in this Agreement. Any Warrant Shares issued upon exercise of the Warrants shall bear a legend to the following effect:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an

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opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

These securities are also subject to the registration rights set forth in that certain Warrant Agreement executed by Perma-Fix Environmental Services, Inc. (the "Company") and Ryan Beck & Co., Inc., dated as of January 25, 2000, a copy of which is on file at the Company's Principal Executive Office.

8. Warrant Holder Not Shareholder. Neither this Agreement nor the Warrant Certificate shall be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Agreement or the Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

9. Exercise Price.

9.1 Initial and Adjusted Exercise Price. Except as otherwise provided in Section 11 hereof, the initial exercise price of each Warrant shall be \$1.44 per share of Common Stock. The adjusted exercise price shall be the price which shall result from time to time from any and all adjustments of the initial exercise price in accordance with the provisions of Section 11 hereof.

9.2 Exercise Price. The term "Exercise Price" herein shall mean the initial exercise price or the adjusted exercise price, depending upon the context.

10. Registration Rights.



10.1 Piggyback Registration. Subject to the terms of this Section 10, if, at any time commencing after the date hereof and expiring seven (7) years from the effective date, the Company proposes to register any of its equity securities under the Act (other than a registration statement (i) on Form S-8 or any successor form to such form or in connection with any employee or director welfare, benefit or compensation plan, (ii) on Form S-4 or any successor form to such form or in connection with any merger, consolidation, acquisition or exchange offer, (iii) in connection with a rights offering exclusively to existing holders of Common Stock, (iv) in connection with an offering solely to employees of the Company or its subsidiaries, or (v) relating to a transaction pursuant to Rule 145 of the Act), it will give written notice by registered mail, at least thirty (30) days prior to the filing of each such registration statement, to the Holder of its intention to do so. If Holder notifies the Company within twenty (20) business days after receipt of any such notice of its desire to include any Warrant Shares held by such Holder or Warrant Shares underlying Warrants held by such Holder in such proposed registration statement, the Company shall afford any such Holder of the opportunity to have any such Warrant Shares held by such Holder or Warrant Shares

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underlying Warrants held by such Holder, registered under such registration statement (sometimes referred to herein as the "Piggyback Registration").

Notwithstanding the provisions of this Section 10.1, the Company shall have the right at any time after it shall have given written notice pursuant to this Section 10.1 (irrespective of whether a written request for inclusion of any such securities shall have been made) to elect not to file any such proposed registration statement, or to withdraw the same after the filing but prior to the effective date thereof.

If a Piggyback Registration is an underwritten primary registration on behalf of the Company, and the managing underwriters advise the Company in writing that in their reasonable opinion based upon market conditions the number of securities requested to be included in such registration exceeds the number that can be sold in such offering or would impair the pricing of such offering, the Company will include in such registration (i) first, the securities the Company proposes to sell, (ii) second, up to the full number of applicable Common Stock requested to be included in such registration by holders of Common Stock with prior or superior piggyback registration rights, (iii) third, the number of applicable Total Warrant Shares requested to be included in such registration, pro rata among the Holders of the Warrant Agreements on the basis of the number of shares requested by such Holders of the Warrant Agreements to be included and which, in the opinion of the managing underwriter, can be sold without adversely affecting the price range or probability of success of such offering, and (iv) fourth, other securities to be included in such registration.

10.2 Demand Registration.

(a) Subject to the terms of this Section 10, at any time after the date hereof and expiring five (5) years from the effective date, the Holders of the Warrant Agreements representing a "Majority" (as hereinafter defined) of the Total Warrant Shares (assuming the exercise of all the warrants issued under all of the Warrant Agreements) shall have the right (which right is in addition to the registration rights under Section 10.1 hereof), exercisable by written notice to the Company, to have the Company prepare and file with the Securities and Exchange Commission (the "Commission"), on one occasion only, a registration statement and such other documents, including a prospectus, as may be necessary in the opinion of both counsel for the Company and counsel for Ryan Beck, in order to comply with the provisions of the Act, so as to permit a public offering and the sale of their respective Total Warrant Shares for nine (9) consecutive months by such Holders of the Warrant Agreements notifying the Company within ten (10) days after receiving notice from the Company of such request.

(b) The Company covenants and agrees to give written notice of any registration request under this Section 10.2 by any of the Holders of the Warrant Agreements to all Holders of the Warrant Agreements within ten (10) days from the date of the receipt of any such registration request.

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(c) Notwithstanding anything to the contrary contained herein, if the Company is obligated to file a registration statement covering all or a portion of the Total Warrant Shares under Section 10.2(a) but shall not have filed a registration statement for that portion (or all, as the case may be) of the Total Warrant Shares to be covered by the registration statement within the time period specified in Section 10.3 hereof pursuant to the written notice specified in Section 10.2(a) of a Majority of the Holders of the Warrant Agreements, which time period shall be extended pursuant to 10.2(d) below, the Company shall have the option, but not the obligation, upon the written notice of election of a Majority of the Holders of the Warrant Agreements to repurchase (i) any and all Warrant Shares at the higher of the Market Price per share of Common Stock on (y) the date of the notice sent pursuant to Section 10.2(a) or (z) the expiration of the period specified in Section 10.3(a) and (ii) any and all Warrants at such Market Price less the Exercise Price of such Warrants. Such repurchase shall be in immediately available funds and shall close within two (2) days after the later of (i) the expiration of the period specified in Section 10.3(a) or (ii) the delivery of the written notice of election specified in this Section 10.2(d). The Company shall have no obligation to exercise the option that may be granted pursuant to the terms of this paragraph (c) of Section 10.2 hereof.

(d) Notwithstanding anything to the contrary, the Company may delay the filing of a registration statement under this Section 10.2 and may withhold efforts to cause such registration statement to become effective if the Company determines in good faith that such registration might interfere with or affect the negotiation or completion of any material transaction or other material event that is being contemplated by the Company (whether or not a final decision has been made to undertake such material transaction at the time the right to delay is exercised). The Company may exercise such right to delay the filing or effectiveness of a registration statement two times and may delay the filing or effectiveness of such registration statement for not more than 90 days beyond the relevant period set forth in Section 10.3(a). Upon any delay by the Company pursuant to this Section 10.2(d) which lasts more than 60 days, the Majority of the Holders of the Warrant Agreements may rescind the notice given pursuant to Section 10.2(a), and the Holders of the Warrant Agreements will be deemed not to have exercised the right to effect the filing of a registration statement under Section 10.2(a) as a result of such notice.

(e) Notwithstanding anything herein to the contrary, the obligations of the Company and rights of the Holders of the Warrant Agreements under Sections 10.1, 10.2 and 10.3 of this Agreement and the other Warrant Agreements shall expire and terminate at such time as Ryan Beck, or its successors, shall have received from counsel to the Company an unqualified written opinion of such counsel that the Holders of the Warrant Agreements have the right, pursuant to the provision of Rule 144 under the Act, to sell within any three month period from the date of the opinion all of the Total Warrant Shares then held and purchasable upon exercise of the warrants issued under the Warrant Agreements by such Holders of the Warrant Agreements.

10.3 Covenants of the Company With Respect to Registration. In connection with any registration under Section 10.1 or 10.2 hereof, the Company covenants and agrees as follows:

(a) The Company shall use its reasonable efforts to file a registration statement demanded under Section 10.2(a) hereof within fifty (50) days of receipt of any demand therefor, shall use its reasonable efforts to have any registration statements declared effective at the earliest possible time, and shall furnish each of the Holders of the Warrant Agreements desiring to sell all or any portion of the Total Warrant Shares under such registration statement such number of prospectuses as shall reasonably be requested.

(b) The Company shall pay all costs (excluding fees and expenses of Holder(s)' counsel and any underwriting or selling commissions which shall be paid by the Holders of the Warrant Agreements), fees and expenses in connection with all registration statements filed pursuant to Section 10.1 and 10.2(a) hereof including, without limitation, the Company's legal and accounting fees, printing expenses, blue sky fees and expenses.

(c) The Company will take all necessary action which may be required in qualifying or registering the Warrant Shares included in a registration statement for offering and sale under the securities or blue sky laws of such states as reasonably are requested by the Holder(s), provided that the Company shall not be obligated to execute or file any general consent to service of process or to qualify as a foreign corporation to do business under the laws of any such jurisdiction.

(d) Nothing contained in this Agreement shall be construed as requiring the Holders of the Warrant Agreements to exercise their Warrants prior to the initial filing of any registration statement or the effectiveness thereof.

(e) The Company shall deliver promptly to each of the Holders of the Warrant Agreements participating in the offering requesting the correspondence and memoranda described below copies of all correspondence between the Commission and the Company, its counsel or auditors and all memoranda relating to discussions with the Commission or its staff with respect to the registration statement.

#### 10.4 Indemnification.

(a) Subject to the terms of this Section 10, the Company will indemnify and hold harmless the Holders of the Warrant Agreements participating in the offerings covered by Sections 10.1 or 10.2., its directors and officers, and each person, if any, who controls such holders within the meaning of Section 15 of the Act or Section 20(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), from and against, and will reimburse such holders and each such controlling person with respect to, any and all loss, damage, liability, cost and expense to which such holder or controlling person may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in a Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to state therein a

material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss, damage, liability, cost or expense arises out of, or is based upon, an untrue statement or alleged untrue statement or omission or alleged omission so made in conformity with information furnished by such holders or such controlling person in writing specifically for use in the preparation thereof.

(b) Subject to the terms of this Section 10, each of the Holders of the Warrant Agreements will severally, and not jointly, indemnify and hold harmless the Company, its directors and officers, any controlling person and any underwriter from and against, and will reimburse the Company, its directors and officers, any controlling person and any underwriter with respect to, any and all loss, damage, liability, cost or expense to which the Company or any controlling person and/or any underwriter may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in such Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was so made in reliance upon, and in strict conformity with, written information furnished by, or on behalf of, the Holders of the Warrant Agreements specifically for use in the preparation thereof.

(c) Promptly after receipt by an indemnified party pursuant to the provisions of Section 10.4(a) or 10.4(b) of notice of the commencement of any action involving the subject matter of the foregoing indemnity provisions, such indemnified party will, if a claim thereof is to be made against the indemnifying party pursuant to the provisions of Section 10.4(a) or 10.4(b), promptly notify the indemnifying party of the commencement thereof; but the omission to so notify the indemnifying party will not relieve the indemnifying party from any liability which it may have to any indemnified party otherwise than hereunder. In case such action is brought against any indemnified party and the indemnified party notifies the indemnifying party of the commencement thereof, the indemnifying party shall have the right to participate in, and, to the extent that it may wish, assume the defense thereof; or, if there is a conflict of interest which would prevent counsel for the indemnifying party from also representing the indemnified party, (or, in the event that the indemnified party and the indemnifying party are both named as parties in the action and it is reasonably determined, in good faith, by counsel for the indemnified party and counsel for the indemnifying party that there is such a conflict) the indemnified parties have the right to select only one (1) separate counsel to participate in the defense of such action on behalf of all such indemnified parties. After notice from the indemnifying parties to such indemnified party of the indemnifying parties' election so to assume the defense thereof, the indemnifying parties will not be liable to such indemnified parties pursuant to the provisions of said Section 10.4(a) or 10.4(b) for any legal or other expense subsequently incurred by such indemnified parties in connection with the defense thereof, other than reasonable costs of investigation, unless (a) the

indemnified parties shall have employed counsel in accordance with the provisions of the preceding sentence; (b) the indemnifying parties shall not have employed counsel satisfactory to the indemnified parties to represent the indemnified parties within a reasonable time after the notice of the commencement of the action or (c) the indemnifying party has authorized the employment of counsel for the indemnified party at the expense of the indemnifying parties.

10.5 Majority. For purposes of this Agreement, the term "Majority" in reference to the Holders of the Warrant Agreements, shall mean in excess of fifty percent (50%) of the then outstanding warrants issued under the Warrant Agreements or Total Warrant Shares that (y) are not held by the Company, an affiliate, officer, creditor, employee or agent thereof or any of their respective affiliates, members of their family, persons acting as nominees or in conjunction therewith and (z) have not been resold to the public pursuant to a registration statement filed with the Commission under the Act.

## 11. Adjustments to Exercise Price and Number of Securities.

11.1 Subdivision and Combination. In case the Company shall at any time subdivide or combine the outstanding shares of Common Stock, the Exercise Price shall forthwith be proportionately decreased in the case of subdivision or increased in the case of combination.

11.2 Stock Dividends and Distributions. If the Company at any time, or from time to time, while the Warrants are outstanding shall declare or pay, without consideration, any dividend on the Common Stock payable in Common Stock, then the Exercise Price shall be proportionately decreased.

11.3 Adjustment in Number of Securities. Upon each adjustment of the Exercise Price pursuant to the provisions of this Section 11, the number of Warrant Shares issuable upon the exercise at the adjusted exercise price of each Warrant shall be adjusted to the nearest full amount by multiplying a number equal to the Exercise Price in effect immediately prior to such adjustment by the number of Warrant Shares issuable upon exercise of the Warrants immediately prior to such adjustment and dividing the product so obtained by the adjusted Exercise Price.

11.4 Definition of Common Stock. For the purpose of this Agreement, the term "Common Stock" shall mean (i) the Common Stock or (ii) the class of stock designated as Common Stock in the Articles of Incorporation of the Company as may be amended as of the date hereof, or (ii) any other class of stock resulting from successive changes or reclassifications of such Common Stock consisting solely of changes in par value, or from par value to no par value, or from no par value to par value.

11.5 Merger or Consolidation. In case of any consolidation of the Company with, or merger of the Company with, or merger of the Company into, another corporation (other than a consolidation or merger in which the Company is the surviving entity), the corporation formed by such consolidation or merger shall execute and deliver to the Holder a supplemental warrant agreement providing that the holder of each

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Warrant then outstanding or to be outstanding shall have the right thereafter (until the expiration of such Warrant) to receive, upon exercise of such Warrant, the kind and amount of shares of stock and other securities and property receivable upon such consolidation or merger, by a holder of the number of shares of Common Stock of the Company for which such warrant might have been exercised immediately prior to such consolidation, merger, sale or transfer. Such supplemental warrant agreement shall provide for adjustments which shall be identical to the adjustments provided in Section 11. The above provision of this subsection shall similarly apply to successive consolidations or mergers.

11.6 No Adjustment of Exercise Price in Certain Cases. No adjustment of the Exercise Price shall be made:

(a) Upon the issuance or sale of the Warrants or the shares of Common Stock issuable upon the exercise of the Warrants;

(b) If the amount of said adjustment shall be less than two cents (2 cents) per Warrant Share, provided, however, that in such case any adjustment that would otherwise be required then to be made shall be carried forward and shall be made at the time of and together with the next subsequent adjustment which, together with any adjustment so carried forward, shall amount to at least two cents (2 cents) per Warrant Share.

12. Exchange and Replacement of Warrant Certificates. Each Warrant Certificate is exchangeable

without expense, upon the surrender thereof by the registered Holder at the principal executive office of the Company, for a new Warrant Certificate of like tenor and date representing in the aggregate the right to purchase the same number of Warrant Shares in such denominations as shall be designated by the Holder thereof at the time of such surrender.

Upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of any Warrant Certificate, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it, and reimbursement to the Company of all reasonable expense incidental thereto, and upon surrender and cancellation of the Warrants, if mutilated, the Company will make and deliver a new Warrant Certificate of like tenor, in lieu thereof.

13. Elimination of Fractional Interests. The Company shall not be required to issue certificates representing fractions of shares of Common Stock upon the exercise of the Warrants, nor shall it be required to issue scrip or pay cash in lieu of fractional interests, it being the intent of the parties that all fractional interests shall be eliminated by rounding any fraction up to the nearest whole number of shares of Common Stock or other securities, properties or rights.

14. Reservation and Listing of Securities. The Company shall at all times reserve and keep available out of its authorized shares of Common Stock, solely for the purpose of issuance upon the exercise of the Warrants, such number of shares of Common Stock or other securities, properties or rights as shall be

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issuable upon the exercise thereof. The Company covenants and agrees that, upon exercise of the Warrants and payment of the Exercise Price therefor, all shares of Common Stock and other securities issuable upon such exercise shall be duly and validly issued, fully paid, non-assessable and not subject to the preemptive rights of any stockholder. As long as the Warrants shall be outstanding, the Company shall use its reasonable efforts to cause all shares of Common Stock issuable upon the exercise of the Warrants to be listed (subject to official notice of issuance) on all securities exchanges on which the Common Stock issued to the public in connection herewith may then be listed and/or quoted.

15. Notices to Warrant Holders. Nothing contained in this Agreement shall be construed as conferring upon the Holder the right to vote or to consent or to receive notice as a stockholder in respect of any meetings of stockholders for the election of directors or any other matter, or as having any rights whatsoever as a stockholder of the Company. If, however, at any time prior to the expiration of the Warrants and their exercise, any of the following events shall occur:

(a) the Company shall take a record of the holders of its shares of Common Stock for the purpose of entitling them to receive a dividend or distribution payable otherwise than in cash, or a cash dividend or distribution payable otherwise than out of current or retained earnings, as indicated by the accounting treatment of such dividend or distribution on the books of the Company; or

(b) the Company shall offer to all the holders of its Common Stock any additional shares of capital stock of the Company or securities convertible into or exchangeable for shares of capital stock of the Company, or any option, right or warrant to subscribe therefor; or

(c) a dissolution, liquidation or winding up of the Company (other than in connection with a consolidation or merger) or a sale of all or substantially all of its property, assets and business as an entirety shall be proposed;

then, in any one or more of said events, the Company shall give written notice of such event at least fifteen

(15) days prior to the date fixed as a record date or the date of closing the transfer books for the determination of the stockholders entitled to such dividend, distribution, convertible or exchangeable securities or subscription rights, or entitled to vote on such proposed dissolution, liquidation, winding up or sale. Such notice shall specify such record date or the date of closing the transfer books, as the case may be. Failure to give such notice or any defect therein shall not affect the validity of any action taken in connection with the declaration or payment of any such dividend, or the issuance of any convertible or exchangeable securities, or subscription rights, options or warrants, or any proposed dissolution, liquidation, winding up or sale.

16. Notices. All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

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(a) If to a registered holder of the Warrants, to the address of such holder as shown on the books of the Company; or

(b) If to the Company, to the address set forth in Section 5 hereof or to such other address as the Company may designate by notice to the Holder; or

(c) If to Ryan Beck, to Ryan, Beck & Co., Inc. 200 Park Avenue, New York, NY 10166, Attention Randy F. Rock.

17. Supplements and Amendments. The Company and Ryan Beck may from time to time supplement or amend this Agreement without the approval of any holder of the Warrants in order to cure any ambiguity, to correct or supplement any provision contained herein which may be defective or inconsistent with any provisions herein, or to make any other provisions in regard to matters or questions arising hereunder which the Company and Ryan Beck may deem necessary or desirable and which the Company and Ryan Beck deem shall not adversely affect the interests of the Holders of the Warrant Agreements.

18. Successors. All the covenants and provisions of this Agreement shall be binding upon and inure to the benefit of the Company, the Holder and their respective successors and assigns hereunder.

19. Termination. This Agreement shall terminate at the close of business on January 25, 2005.

20. Governing Law; Submission to Jurisdiction. This Agreement and each Warrant Certificate issued hereunder shall be deemed to be a contract made under the laws of the State of Delaware and for all purposes shall be construed in accordance with the laws of said State without giving effect to the rules of said State governing the conflicts of laws.

The Company and the Holder hereby agree that any action, proceeding or claim against it arising out of, or relating in any way to, this Agreement shall be brought and enforced in the federal courts located in Wilmington, Delaware, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company and the Holder hereby irrevocably waive any objection to such exclusive jurisdiction or inconvenient forum. Any such process or summons to be served upon any of the Company and the Holder (at the option of the party bringing such action, proceeding or claim) may be served by transmitting a copy thereof, by registered or certified mail, return receipt requested, postage prepaid, addressed to it at the address set forth in Section 16 hereof. Such mailing shall be deemed personal service and shall be legal and binding upon the party so served in any action, proceeding or claim. The Company and the Holder agree that the prevailing party(ies) in any such action or proceeding shall be entitled to recover from the other

party(ies) all of its/their reasonable legal costs and expenses relating to such action or proceeding and/or incurred in connection with the preparation therefor.

21. Entire Agreement; Modification. This Agreement contains the entire understanding between the parties hereto with respect to the subject matter hereof and may not be modified or amended except by a writing duly signed by the party against whom enforcement of the modification or amendment is sought.

22. Severability. If any provision of this Agreement shall be held to be invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision of this Agreement.

23. Captions. The caption headings of the Sections of this Agreement are for convenience of reference only and are not intended, nor should they be construed as, a part of this Agreement and shall be given no substantive effect.

24. Benefits of this Agreement. Nothing in this Agreement shall be construed to give to any person or corporation other than the Company and the Holder any legal or equitable right, remedy or claim under this Agreement; and this Agreement shall be for the sole benefit of the Company and the Holder and any other registered holder.

25. Counterparts. This Agreement may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original, and such counterparts shall together constitute but one and the same instrument.

26. Assignment. This Agreement may not be assigned by the Holder without prior written consent of all parties hereto. The Warrants granted hereunder may be assigned in part, or in whole if prior to any such assignment the assignee executes and delivers to the Company a Certification, the form and content of which must be satisfactory to the Company, in which such assignee represents to the Company that such assignee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such assignee is an accredited investor, and that such assignee is acquiring such designated Warrants for the assignees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and such assignee shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the assignee.



the day and year first above written.

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

By: /s/ Richard T. Kelecy  
Richard T. Kelecy  
Vice President and Chief Financial Officer

RYAN, BECK & CO., INC.

By: /s/ Randy Rock  
Name: Randy F. Rock  
Title: Managing Director

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.**

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS AND CONDITIONS, INCLUDING REGARDING PARTIAL CANCELLATION, SET FORTH IN THAT CERTAIN WARRANT AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.**

**COMMON STOCK PURCHASE WARRANT CERTIFICATE**

**Dated: January 25, 2000**

**Thirty Thousand (30,000) Warrants**  
**to Purchase Thirty Thousand (30,000)**  
**Shares of Perma-Fix Environmental Services, Inc.**  
**Common Stock, \$.001 Par Value Per Share**  
**VOID AFTER 5:30 P.M., NEW YORK TIME**

**on**

**January 25, 2005**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**, a Delaware corporation (the "Company"), hereby certifies that RYAN, BECK & CO., INC., and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time after the date hereof, until 5:30 p.m., New York Time on January 25, 2005, up to an aggregate of Thirty Thousand (30,000) shares (the "Shares" or "Warrant Shares") of the Company's common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.44 per share (the "Per Share Exercise Price") subject to adjustment as provided in that certain Warrant Agreement of even date herewith between the Company and the Holder.

1. **Exercise of Warrant.** Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the Election to Purchase or Assign form duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32606-1649, together with (a) cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased or (b) Warrants to be surrendered pursuant to a cashless exercise as described in Section 5.2 of the Warrant Agreement (either, the "Aggregate Exercise Price"), the Company, or the Company's transfer agent, as the case may be, shall deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. All or less than all of the Warrants represented by this Certificate may be exercised and, in case of the exercise of less than all, the Company, upon surrender hereof, will deliver to the Warrant Holder a new Warrant Certificate or Certificates of like tenor and dated the date hereof entitling said Warrant Holder to purchase the number of Warrant Shares represented by this Certificate which have not been exercised or surrendered and to receive the Registration Rights set forth in Section 8 below (to the extent such rights have not already been exercised) with respect to such Warrant Shares.

2. **Exchange and Transfer.** This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Certificate or Certificates of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares as the Certificate or Certificates surrendered.

3. **Rights and Obligations of Warrant Holder of this Certificate.** The Holder of this Certificate shall not, by virtue hereof, be entitled to any rights of a stockholder in the Company, either at law or in equity; provided, however, that in the event any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder shall, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Purchase form, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by his acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder of this Certificate, by accepting the same, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner for all purposes whatsoever, and the Company shall not be affected by any notice to the contrary.

4. **Cancellation of Warrants.** Anything to the contrary notwithstanding, the Company shall have the right to cancel 50% of the Warrants issued and then outstanding, on a pro rata basis among the registered holders of the Warrants thereof, in the event that no Transaction (as defined in the Warrant

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Agreement) shall have occurred within one year from the date hereof. In the event any registered holder of the Warrants holds an odd number of Warrants at the time of cancellation of 50% of the Warrants issued and then outstanding by the Company, the number of Warrants held by such registered holder of the Warrants which are canceled shall be rounded up to the next highest whole number.

5. **Issuance of Certificates.** As soon as practicable after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Per Share Exercise Price. All such certificates shall bear a restrictive legend to the effect that, subject to the provisions of Section 8 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration and qualification or an exemption thereof, such legend to be substantially in the form of the bold face language appearing on page 1 of this Warrant Certificate.

6. **Disposition of Warrants or Shares.**

a. The Holder of this Warrant Certificate, by his acceptance thereof, agrees that (i) no public distribution of Warrants or Shares will be made in violation of the provisions of the Securities Act of 1933, as amended, and the Rules and Regulations promulgated thereunder (collectively, the "Act"), and (ii) during such period as delivery of a prospectus with respect to Warrants or Shares may be required by the Act, no public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in

compliance with all applicable state securities laws. The holder this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that prior written consent to such transfer be obtained from the Company after delivery to the Company of a Certification and agreement as defined in Section 26 of the Warrant Agreement.

b. By acceptance hereof, the Holder represents and warrants that this Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of

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the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear the following legend:

The securities represented by this certificate have not been registered under the Securities Act of 1933 and are restricted securities within the meaning thereof. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act which is effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that such sale or transfer is exempt from the registration requirements of such Act.

7. **Warrant Holder Not Shareholder.** This Warrant Certificate shall not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

8. **Registration Rights.** The Company agrees that the Warrant Shares shall have those registration rights set forth in Section 10 of the Warrant Agreement.

9. **Notices.** All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

If to the Company:	Perma-Fix Environmental Services, Inc. 1940 Northwest 67th Place Gainesville, Florida 32606-1649 Attention: Dr. Louis F. Centofanti Chief Executive Officer
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with copies simultaneously by like means to:	Conner & Winters One Leadership Square, Suite 1700
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211 North Robinson  
Oklahoma City, Oklahoma 73102  
Attention: Irwin H. Steinhorn, Esquire

If to the Holder: Ryan, Beck & Co., Inc.  
200 Park Avenue  
New York, New York 10166  
Attention: Randy Rock

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10. **Governing Law.** This Warrant Certificate and all rights and obligations hereunder shall be deemed to be made under and governed by the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

11. **Successors and Assigns.** This Warrant Certificate shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

12. **Headings.** The headings of various sections of this Warrant Certificate have been inserted for reference only and shall not be a part of this Agreement.

13. **Subject to Warrant Agreement.** This Warrant Certificate is subject to the terms and conditions set forth in the Warrant Agreement. In the event of a conflict between this Warrant and the Warrant Agreement, the Warrant Agreement shall control.

**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of January 25, 2000.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By: /s/ Richard T. Kelecy  
Richard T. Kelecy  
Vice President and Chief Financial Officer

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**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.**

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS AND CONDITIONS, INCLUDING REGARDING PARTIAL CANCELLATION, SET FORTH IN THAT CERTAIN WARRANT AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.**

**COMMON STOCK PURCHASE WARRANT CERTIFICATE**

**Dated: January 25, 2000**

**Three Thousand Seven Hundred Fifty (3,750) Warrants  
to Purchase Three Thousand Seven Hundred Fifty (3,750)**

**Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:30 P.M., NEW YORK TIME**

**on**

**January 25, 2005**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**, a Delaware corporation (the "Company"), hereby certifies that RYAN, BECK & CO., INC., and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time after the date hereof, until 5:30 p.m., New York Time on January 25, 2005, up to an aggregate of Three Thousand Seven Hundred Fifty (3,750) shares (the "Shares" or "Warrant Shares") of the Company's common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.44 per share (the "Per Share Exercise Price") subject to adjustment as provided in that certain Warrant Agreement of even date herewith between the Company and the Holder.

1. **Exercise of Warrant.** Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the Election to Purchase or Assign form duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32606-1649,

together with (a) cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased or (b) Warrants to be surrendered pursuant to a cashless exercise as described in Section 5.2 of the Warrant Agreement (either, the "Aggregate Exercise Price"), the Company, or the Company's transfer agent, as the case may be, shall deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. All or less than all of the Warrants represented by this Certificate may be exercised and, in case of the exercise of less than all, the Company, upon surrender hereof, will deliver to the Warrant Holder a new Warrant Certificate or Certificates of like tenor and dated the date hereof entitling said Warrant Holder to purchase the number of Warrant Shares represented by this Certificate which have not been exercised or surrendered and to receive the Registration Rights set forth in Section 8 below (to the extent such rights have not already been exercised) with respect to such Warrant Shares.

2. **Exchange and Transfer.** This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Certificate or Certificates of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares as the Certificate or Certificates surrendered.

3. **Rights and Obligations of Warrant Holder of this Certificate.** The Holder of this Certificate shall not, by virtue hereof, be entitled to any rights of a stockholder in the Company, either at law or in equity; provided, however, that in the event any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder shall, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Purchase form, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by his acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder of this Certificate, by accepting the same, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner for all purposes whatsoever, and the Company shall not be affected by any notice to the contrary.

4. **Cancellation of Warrants.** Anything to the contrary notwithstanding, the Company shall have the right to cancel 50% of the Warrants issued and then outstanding, on a pro rata basis among the

registered holders of the Warrants thereof, in the event that no Transaction (as defined in the Warrant Agreement) shall have occurred within one year from the date hereof. In the event any registered holder of the Warrants holds an odd number of Warrants at the time of cancellation of 50% of the Warrants issued and then outstanding by the Company, the number of Warrants held by such registered holder of the Warrants

which are canceled shall be rounded up to the next highest whole number.

5. **Issuance of Certificates.** As soon as practicable after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Per Share Exercise Price. All such certificates shall bear a restrictive legend to the effect that, subject to the provisions of Section 8 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration and qualification or an exemption thereof, such legend to be substantially in the form of the bold face language appearing on page 1 of this Warrant Certificate.

6. **Disposition of Warrants or Shares.**

a. The Holder of this Warrant Certificate, by his acceptance thereof, agrees that (i) no public distribution of Warrants or Shares will be made in violation of the provisions of the Securities Act of 1933, as amended, and the Rules and Regulations promulgated thereunder (collectively, the "Act"), and (ii) during such period as delivery of a prospectus with respect to Warrants or Shares may be required by the Act, no public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The holder this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that prior written consent to such transfer be obtained from the Company after delivery to the Company of a Certification and agreement as defined in Section 26 of the Warrant Agreement.

b. By acceptance hereof, the Holder represents and warrants that this Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and

distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear the following legend:

The securities represented by this certificate have not been registered under the Securities Act of 1933 and are restricted securities within the meaning thereof. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act which is effective and current with respect to such securities or pursuant to an opinion of counsel



reasonably satisfactory to the issuer of such securities that such sale or transfer is exempt from the registration requirements of such Act.

7. **Warrant Holder Not Shareholder.** This Warrant Certificate shall not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

8. **Registration Rights.** The Company agrees that the Warrant Shares shall have those registration rights set forth in Section 10 of the Warrant Agreement.

9. **Notices.** All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

If to the Company:	Perma-Fix Environmental Services, Inc. 1940 Northwest 67th Place Gainesville, Florida 32606-1649 Attention: Dr. Louis F. Centofanti Chief Executive Officer
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with copies simultaneously by like means to:	Conner & Winters One Leadership Square, Suite 1700 211 North Robinson Oklahoma City, Oklahoma 73102 Attention: Irwin H. Steinhorn, Esquire
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If to the Holder:	Ryan, Beck & Co., Inc. 200 Park Avenue New York, New York 10166 Attention: Randy Rock
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10. **Governing Law.** This Warrant Certificate and all rights and obligations hereunder shall be deemed to be made under and governed by the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

11. **Successors and Assigns.** This Warrant Certificate shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

12. **Headings.** The headings of various sections of this Warrant Certificate have been inserted for reference only and shall not be a part of this Agreement.

13. **Subject to Warrant Agreement.** This Warrant Certificate is subject to the terms and conditions set forth in the Warrant Agreement. In the event of a conflict between this Warrant and the Warrant Agreement, the Warrant Agreement shall control.

**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of January 25, 2000.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By: /s/ Richard T. Kelecy  
Richard T. Kelecy  
Vice President and Chief Financial Officer

THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.

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PERMA-FIX ENVIRONMENTAL SERVICES, INC.

RYAN, BECK & CO., LLC

WARRANT AGREEMENT

Dated as of January 31, 2001

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WARRANT AGREEMENT, dated as of January 31, 2001 (the "Agreement"), by and between PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Company") and RYAN, BECK & CO., LLC ("Ryan Beck" or "Holder").

W I T N E S S E T H:

WHEREAS, the Company proposes to issue to the Holder, or subject to the terms hereof, those permitted designees, warrants ("Warrants") to purchase up to an aggregate 34,028 shares of common stock of the Company, par value \$.001 per share ("Common Stock");

WHEREAS, this Agreement is one of nine warrant agreements (collectively, the "Warrant Agreements") issued by the Company to Ryan Beck, Larkspur Capital Corporation ("Larkspur") and certain of their officers and/or directors, with all such Warrant Agreements dated as of January 31, 2001, allowing the holders (collectively, the "Holders of the Warrant Agreements") under all of the Warrant Agreements to purchase up to an aggregate of 170,139 shares of Common Stock (the "Total Warrant Shares"), pursuant to the terms of a letter agreement, dated January 25, 2000 (the "Letter Agreement"), among the Company, Ryan Beck and Larkspur, whereby Ryan Beck and Larkspur have agreed to provide certain financial services to the Company;

WHEREAS, the Company proposes to issue the Warrants to the Holder and enter into all of the Warrant Agreements, as a part of the retainer for the services to be provided under the Letter Agreement;

WHEREAS, the Holder is an "accredited investor," as such term is defined in Rule 501 of Regulation D promulgated under the Securities Act of 1933, as amended (the "Act");

WHEREAS, if the Holder designates any other party as a designee for the purpose of receiving any portion of the Warrants pursuant to the terms hereof, then, prior to receiving any of the Warrants as designee of the Holder, such designee must execute and deliver to the Company a written certification ("Certification"), the form and content of which must be satisfactory to the Company, in which such designee represents to the Company that such designee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such designee is an accredited investor, and that such designee is acquiring such designated Warrants for the designees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the designee;

WHEREAS, the Common Stock is listed for trading on the Boston Stock Exchange and the National Association of Securities Dealers Automated Quotation SmallCap market ("NASDAQ"), and the Company is subject to the reporting requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and has been subject to such filing requirements for the past ninety (90) days; and

WHEREAS, in reliance upon the representations made by the Holder in this Agreement and the Holders of the Warrant Agreements in all of the other Warrant Agreements, the transactions contemplated by this Agreement and all of the Warrant Agreements, are such that the offer and purchase of securities hereunder will be exempt from registration under applicable federal securities laws because this is a private placement and intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Securities Act and/or Regulation D promulgated under the Act.

NOW, THEREFORE, in consideration of the premises, the payment by Ryan Beck and Larkspur to the Company of an aggregate of one dollar and seventy cents (\$1.70), the agreements herein set forth and other good and valuable consideration, hereby acknowledged, the parties hereto agree as follows:

1. Grant. The Holder is hereby granted Warrants providing the right to purchase, at any time and from the date hereof until 5:30 p.m., New York time, on January 31, 2006, up to an aggregate of 34,028 shares of Common Stock (the "Warrant Shares") at an initial exercise price (subject to adjustment as provided in Section 11 hereof) of \$1.44 per share of Common Stock subject to the terms and conditions of this Agreement. Except as set forth herein, the Warrant Shares issuable upon exercise of the Warrants are in all respects identical to the shares of Common Stock that have been issued to the public. .

2. Warrant Certificate. The warrant certificates (the "Warrant Certificate") delivered and to be delivered pursuant to this Agreement shall be in the form set forth in Exhibit A, attached hereto and made a part hereof, with such appropriate insertions, omissions, substitutions, and other variations as required or permitted by this Agreement. There shall be one Warrant Certificate

issued to the Holder hereunder in the amount of 34,028 Warrants.

3. Representations, Warranties and Covenants of Holder. The Holder of Warrants and/or Warrant Shares hereby represents, warrants and covenants to the Company as follows:

3.1 Investment Intent. The Holder represents and warrants that the Warrants are being, and any underlying Warrant Shares will be, purchased or acquired solely for such Holder's own account, for investment purposes only and not with a view toward the distribution or resale to others. The Holder acknowledges and understands that neither the Warrants nor Warrant Shares have been registered under the Act by reason of a claimed exemption under the provisions of the Act which depends, in large part, upon the Holder's representations as to investment intention, investor status, and related and other matters set forth herein. The Holder understands that, in the view of the Securities and Exchange Commission (the "Commission"), among other things, a purchase with an intent to distribute or resell would represent a purchase and acquisition with an intent inconsistent with its representation to the Company, and the Commission might regard such a transfer as a deferred sale for which the registration exemption is not available.

3.2 Certain Risk. The Holder recognizes that the purchase of the Warrants or Warrant Shares involves a high degree of risk in that (a) although the Company has had an unaudited net income for the nine month period ended September 30, 2000, and audited net income for the year ended December 31, 1999, the Company did sustain losses through December 31, 1998, from its operations, and may require substantial funds for its operations; (b) that the Company has a substantial accumulated deficit; (c) an investment in the Company is highly speculative and only investors who can afford the loss of their entire investment should consider investing in the Company and the Warrants or Warrant Shares; (d) an investor may not be able to liquidate his investment; (e) transferability of the Warrants or Warrant Shares is extremely limited; (f) in the event of a disposition an investor could sustain the loss of his entire investment; (g) the Warrants represent non-voting equity securities, and the right to exercise such Warrants and purchase shares of voting equity securities in a corporate entity that has an accumulated deficit; (h) no return on investment, whether through distributions, appreciation, transferability or otherwise, and no performance by, through or of the Company, has been promised, assured, represented or warranted by the Company, or by any director, officer, employee, agent or representative thereof; and, (i) while the Common

Stock is presently quoted and traded on the Boston Stock Exchange and the NASDAQ and while the Holder is a beneficiary of certain registration rights provided herein, the Warrants subscribed for and that are purchased under this Agreement and the Warrant Shares (a) are not registered under applicable federal or state securities laws, and thus may not be sold, conveyed, assigned or transferred unless registered under such laws or unless an exemption from registration is available under such laws, as more fully described herein, and (b) the Warrants subscribed for and that are to be purchased under this Agreement are not quoted, traded or listed for trading or quotation on the NASDAQ, or any other organized market or quotation system, and there is therefore no present public or other market for the Warrants, nor can there be any assurance that the Common Stock will continue to be quoted, traded or listed for trading or quotation on the Boston Stock Exchange or the NASDAQ or on any other organized market or quotation system.

3.3 Prior Investment Experience. The Holder acknowledges that Holder has prior investment experience, including investment in non-listed and non-registered securities, or Holder has employed the services of an investment advisor, attorney or accountant to read all of the documents furnished or made available by the Company to them and to evaluate the merits and risks of such an investment on Holder's behalf, and that Holder recognizes the highly speculative nature of this investment.

3.4 No Review by the Commission. The Holder hereby acknowledges that this offering of the Warrants has not been reviewed by the Commission because this private placement is intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Act and/or Regulation D promulgated under the Act.

3.5 Not Registered. The Holder understands that the Warrants and the Warrant Shares have not been registered under the Act by reason of a claimed exemption under the provisions of the Act which depends, in part, upon the Holder's investment intention. In this connection, the Holder understands that it is the position of the Commission that the statutory basis for such exemption would not be present if Holder's representations merely meant that Holder's intention was to hold such securities for a short period, such as the capital gains period of tax statutes, for a deferred sale, for a market rise (assuming that a market develops), or for any other fixed period.

3.6 No Public Market. The Holder understands that there is no public market for the Warrants. The Holder understands that although there is presently a public market for the Common Stock, including the Warrant Shares, Rule 144 (the "Rule")

promulgated under the Act requires, among other conditions, a one-year holding period following full payment of the consideration therefor prior to the resale (in limited amounts) of securities acquired in a nonpublic offering without having to satisfy the registration requirements under the Act. The Holder understands that the Company makes no representation or warranty regarding its fulfillment in the future of any reporting requirements under the Exchange Act, or its dissemination to the public of any current financial or other information concerning the Company, as is required by the Rule as one of the conditions of its availability. The Holder understands and hereby acknowledges that the Company is under no obligation to register the Warrants or the Warrant Shares under the Act, except as set forth in Section 10 hereof.

- 3.7 Sophisticated Investor. The Holder (a) has adequate means of providing for the Holder's current financial needs and possible contingencies and has no need for economic important purchase Holder Holder is capable of evaluating the merits, risks and advisability of an investment in the Warrants.

- 3.8 Tax Consequences. The Holder acknowledges that the Company has made no representation regarding the potential or actual tax consequences for the Holder which will result from entering into the Agreement. The Holder acknowledges that the Holder bears complete responsibility for obtaining adequate tax advice regarding the Agreement.

- 3.9 Commission Filing. The Holder acknowledges that Holder has been previously furnished with true and complete copies of the following documents which have been filed with the Commission pursuant to Sections 13(a), 14(a), 14(c) or 15(d) of the Exchange Act, and that such have been furnished to the Holder a reasonable time prior to the date hereof: (i) Annual Report on Form 10-K for the year ended December 31, 1999 (the "Form 10-K"), as may be amended; (ii) the Company's Proxy Statement delivered to shareholders on or about November 13, 2000; and (iii) the information contained in any reports

or documents required to be filed by the Company under Sections 13(a), 14(a), 14(c) or 15(d) of the Exchange Act since the distribution of the Form 10-K.

- 3.10 Documents, Information and Access. The Holder's decision to purchase the Warrants are not based on any promotional, marketing or sales materials, and

the

Holder and the Holder's representatives have been afforded, prior to purchase thereof, the opportunity to ask questions of, and to receive answers from, the Company and its management, and has had access to all documents and information which Holder deems material to an investment decision with respect to the purchase of Warrants hereunder.

- 3.11 No Commission. The Holder agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the subscription described hereunder.

- 3.12 Accredited Investor. The Holder is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act as follows:

3.12.1 Natural Person. If the Holder is a natural person, such person (i) has an individual net worth, or joint net worth with such person's spouse at the time of the purchase described hereunder, in excess of \$1,000,000 or (ii) had individual income in excess of \$200,000 in each of the two most recent years or joint income with such person's spouse in excess of \$300,000 in each of those years and has a reasonable expectation of reaching the same income level in the current year.

3.12.2 Corporation. If the Holder is a corporation, such corporation has total assets in excess of \$5,000,000 and was not formed for the specific purpose of acquiring the Warrants or the Warrant Shares.

3.12.3 Trust. If the Holder is a trust, such must be (i) a revocable or grantor trust and each person with the power to revoke the trust must qualify as an accredited investor under Section 3.12.1 or 3.12.2 above and/or (ii) a trust with total assets in excess of \$5,000,000, not formed for the specific purpose of acquiring the securities offered and whose purchase is

directed

by a sophisticated person as described in Section Section 3.7 hereof.

- 3.13 Reliance. The Holder understands and acknowledges that the Company is relying upon all of the representations, warranties, covenants, understandings, acknowledgments and agreements contained in this Agreement in determining

whether to accept this subscription and to sell and issue the Warrants to the



Holder.

- 3.14 Accuracy or Representations and Warranties. All of the representations, warranties, understandings and acknowledgments that Holder has made herein are true and correct in all material respects as of the date of execution hereof. The Holder will perform and comply fully in all material respects with all covenants and agreements set forth herein, and the Holder covenants and agrees that until the acceptance of this Agreement by the Company, the Holder shall inform the Company immediately in writing of any changes in any of the representations or warranties provided or contained herein.

4. Representations, Warranties and Covenants of the Company. In order to induce Holder to enter into this Agreement, the Company hereby represents, warrants and covenants to Holder as follows:

- 4.1 Organization, Authority, Qualification. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Delaware. The Company has full corporate power and authority to own and operate its properties and assets and to conduct and carry on its business as it is now being conducted and operated.
- 4.2 Authorization. The Company has full power and authority to execute and deliver this Agreement and to perform its obligations under and consummate the transactions contemplated by this Agreement. Upon the execution of this Agreement by the Company and delivery of the Warrants, this Agreement shall have been duly and validly executed and delivered by the Company and shall constitute the legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms.
- 4.3 No Commission. The Company agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the issuance of the Warrants.
- 4.4 Ownership of, and Title to, Securities. The Warrant Shares, if issued, will be, duly authorized, validly issued, fully paid and nonassessable shares of the capital stock of the Company, free of personal liability. Upon consummation of the issuance of the Warrants (and upon the exercise of the Warrants, in whole or in part) pursuant to this Agreement, the Holder will own and acquire title to the Warrants (and the Warrant Shares, as the case may be) free and clear of any and all proxies, voting trusts, pledges, options, restrictions, or other legal or equitable encumbrance of any

nature whatsoever (other than the restrictions on transfer due to federal and state securities laws or as otherwise provided for in this Agreement or in the Warrants).

5. Exercise of Warrant.

5.1 Method of Exercise. Subject to the terms hereof, the Warrants initially are exercisable at an aggregate initial exercise price per share of Common Stock set forth in Section 9.1 hereof payable by certified or cashier's check in New York Clearing House funds, subject to adjustment as provided in Section 11 hereof. Upon surrender of a Warrant Certificate with the annexed Form of Election to Purchase duly

executed, together with payment of the Exercise Price (as hereinafter defined) for the shares of Common Stock purchased pursuant to the terms hereof, at the Company's principal offices (presently located at 1940 NW 67<sup>th</sup> Place, Gainesville, FL 32653) the Holder shall be entitled to receive a certificate or certificates for the shares of Common Stock so purchased. The purchase rights represented by each Warrant Certificate are exercisable at the option of the Holder thereof, in whole or in part (but not as to fractional shares of the Common Stock underlying the Warrants). Warrants may be exercised to purchase all or part of the shares of Common Stock represented thereby. In the case of the purchase of less than all the shares of Common Stock purchasable under any Warrant Certificate, the Company shall cancel said Warrant Certificate upon the surrender thereof and shall execute and deliver a new Warrant Certificate of like tenor for the balance of the shares of Common Stock purchasable thereunder.

5.2 Exercise by Surrender of Warrants. In addition to the method of payment set forth in Section 5.1 and in lieu of any cash payment required thereunder, subject to the terms hereof, the Holder of the Warrants shall have the right at any time and from time to time to exercise the Warrants held by such Holder in full or in part by surrendering a Warrant Certificate in the manner specified in Section 5.1 in exchange for the number of Warrant Shares equal to the product of (x) the number of Warrant Shares as to which the Warrants are being exercised multiplied by (y) a fraction, the numerator of which is the Market Price (as defined in Section 5.3 below) of the Warrant Shares less the Exercise Price and the denominator of which is such Market Price. Solely for the purposes of this paragraph, Market Price shall be calculated as the average of the Market Prices for each of the five trading days preceding the Notice Date.

5.3 Definition of Market Price. As used herein, the phrase "Market Price" at any date shall be deemed to be the average closing bid quotation of the Company's Common Stock (i) as reported on the NASDAQ for the last five (5) trading days, or (ii) if the Common Stock is not traded on NASDAQ, the average closing price as listed on a national securities exchange for the last five (5) trading days, or (iii) if no longer traded on NASDAQ or listed on a national securities exchange, as determined in good faith by resolution of the Board of Directors of the Company, based on the best information available to it.

6. Issuance of Certificates. Upon the exercise of the Warrants or any portion thereof, the issuance of certificates for the Warrant Shares underlying such Warrants so exercised, shall be made forthwith (and in any event within five (5) business days thereafter) without charge to the Holder exercising such Warrants,

including, without limitation, any tax which may be payable in respect of the issuance thereof, and such certificates shall be issued in the name of the Holder thereof.

The Warrants and the certificates representing the Warrant Shares shall be executed on behalf of the Company by the manual or facsimile signature of the then Chairman or Vice Chairman of the Board of Directors or President or Vice President of the Company.

7. Restriction on Transfer of Warrants or Warrant Shares. The Holder, by such Holder's acceptance hereof, covenants and agrees that the Warrants are being acquired as an investment and not with a view to the distribution thereof. The Holder, by such Holder's acceptance thereof, agrees that (i) no public distribution of Warrants or Warrant Shares will be made in violation of the provisions of the Act and the Rules and Regulations promulgated thereunder and (ii) during such period as delivery of a prospectus with respect to Warrants or Warrant Shares may be required by the Act, no public distribution of Warrants or Warrant Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The Holder and each permitted transferee thereof further agrees that if any distribution

of any of the Warrants or Warrant Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, or an opinion of counsel reasonably satisfactory to the Company, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that any transferee thereof deliver to the Company his or its written agreement to accept and be bound by all of the terms and conditions contained in this Agreement. Any Warrant Shares issued upon exercise of the Warrants shall bear a legend to the following effect:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

These securities are also subject to the registration rights set forth in that certain Warrant Agreement executed by Perma-Fix Environmental Services, Inc. (the "Company") and Ryan, Beck & Co. LLC, dated as

of January 31, 2001, a copy of which is on file at the Company's Principal Executive Office.

8. Warrant Holder Not Shareholder. Neither this Agreement nor the Warrant Certificate shall be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Agreement or the Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

9. Exercise Price.

9.1 Initial and Adjusted Exercise Price. Except as otherwise provided in Section 11 hereof, the initial exercise price of each Warrant shall be \$1.44 per share of Common Stock. The adjusted exercise price shall be the price which shall result from time to time from any and all adjustments of the initial exercise price in accordance with the provisions of Section 11 hereof.

9.2 Exercise Price. The term "Exercise Price" herein shall mean the initial exercise price or the adjusted exercise price, depending upon the context.

10. Registration Rights.

10.1 Piggyback Registration. Subject to the terms of this Section 10, if, at any time commencing after the date hereof and expiring seven (7) years from the effective date, the Company proposes to register any of its equity securities under the Act (other than a registration statement (i) on Form S-8 or any successor form to such form or in connection with any employee or director welfare, benefit or compensation plan, (ii) on Form S-4 or any successor form to such form or in connection with any merger, consolidation,

acquisition or exchange offer, (iii) in connection with a rights offering exclusively to existing holders of Common Stock, (iv) in connection with an offering solely to employees of the Company or its subsidiaries, or (v) relating to a transaction pursuant to Rule 145 of the Act), it will give written notice by registered mail, at least thirty (30) days prior to the filing of each such registration statement, to the Holder of its intention to do so. If Holder notifies the Company within twenty (20) business days after receipt of any such notice of its desire to include any Warrant Shares held by such Holder or Warrant Shares underlying Warrants held by such Holder in such proposed registration statement, the Company shall afford any such Holder of the opportunity to have any such Warrant Shares held by such Holder or Warrant Shares underlying Warrants held by such Holder, registered under such registration statement (sometimes referred to herein as the "Piggyback Registration").

Notwithstanding the provisions of this Section 10.1, the Company shall have the right at any time after it shall have given written notice pursuant to this Section 10.1 (irrespective of whether a written request for inclusion of any such securities shall have been made) to elect not to file any such proposed registration statement, or to withdraw the same after the filing but prior to the effective date thereof.

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If a Piggyback Registration is an underwritten primary registration on behalf of the Company, and the managing underwriters advise the Company in writing that in their reasonable opinion based upon market conditions the number of securities requested to be included in such registration exceeds the number that can be sold in such offering or would impair the pricing of such offering, the Company will include in such registration (i) first, the securities the Company proposes to sell, (ii) second, up to the full number of applicable Common Stock requested to be included in such registration by holders of Common Stock with prior or superior piggyback registration rights, (iii) third, the number of applicable Total Warrant Shares requested to be included in such registration, pro rata among the Holders of the Warrant Agreements on the basis of the number of shares requested by such Holders of the Warrant Agreements to be included and which, in the opinion of the managing underwriter, can be sold without adversely affecting the price range or probability of success of such offering, and (iv) fourth, other securities to be included in such registration.

### 10.2 Demand Registration.

(a) Subject to the terms of this Section 10, at any time after the date hereof and expiring five (5) years from the effective date, the Holders of the Warrant Agreements representing a "Majority" (as hereinafter defined) of the Total Warrant Shares (assuming the exercise of all the warrants issued under all of the Warrant Agreements) shall have the right (which right is in addition to the registration rights under Section 10.1 hereof), exercisable by written notice to the Company, to have the Company prepare and file with the Securities and Exchange Commission (the "Commission"), on one occasion only, a registration statement and such other documents, including a prospectus, as may be necessary in the opinion of both counsel for the Company and counsel for Ryan Beck, in order to comply with the provisions of the Act, so as to permit a public offering and the sale of their respective Total Warrant Shares for nine (9) consecutive months by such Holders of the Warrant Agreements notifying the Company within ten (10) days after receiving notice from the Company of such request.

(b) The Company covenants and agrees to give written notice of any registration request under this Section 10.2 by any of the Holders of the Warrant Agreements to all Holders of the Warrant Agreements within ten (10) days from the date of the receipt of any such registration request.

(c) Notwithstanding anything to the contrary contained herein, if the Company is obligated to file a registration statement covering all or a portion of the Total Warrant Shares under Section 10.2(a) but shall not have filed a registration statement for that portion (or all, as the case may be) of the Total Warrant Shares to be covered by the registration statement within the time period specified in Section 10.3 hereof pursuant to the written notice specified in Section 10.2(a) of a Majority of the Holders of the Warrant Agreements, which time period shall be extended pursuant to 10.2(d) below, the Company shall have the option, but not the obligation, upon the written notice of election of a Majority of the Holders of the Warrant Agreements to repurchase (i) any and all Warrant Shares at the higher of the Market Price per share of Common Stock on (y) the date of the notice sent pursuant to Section 10.2(a) or (z) the expiration of the period specified in Section 10.3(a) and (ii) any and all Warrants at such Market Price less the Exercise Price of such Warrants. Such repurchase shall be in immediately available funds and shall close within two (2) days after the later of (i) the expiration of the period specified in Section 10.3(a) or (ii) the delivery of the written notice of election specified in this Section 10.2(d). The Company shall have no obligation to exercise the option that may be granted pursuant to the terms of this paragraph (c) of Section 10.2 hereof.

(d) Notwithstanding anything to the contrary, the Company may delay the filing of a registration statement under this Section 10.2 and may withhold efforts to cause such registration statement to become effective if the Company determines in good faith that such registration might interfere with or affect the negotiation or completion of any material transaction or other material event that is being contemplated by the Company (whether or not a final decision has been made to undertake such material transaction at the time the right to delay is exercised). The Company may exercise such right to delay the filing or effectiveness of a registration statement two times and may delay the filing or effectiveness of such registration statement for not more than 90 days beyond the relevant period set forth in Section 10.3(a). Upon any delay by the Company pursuant to this Section 10.2(d) which lasts more than 60 days, the Majority of the Holders of the Warrant Agreements may rescind the notice given pursuant to Section 10.2(a), and the Holders of the Warrant Agreements will be deemed not to have exercised the right to effect the filing of a registration statement under Section 10.2(a) as a result of such notice.

(e) Notwithstanding anything herein to the contrary, the obligations of the Company and rights of the Holders of the Warrant Agreements under Sections 10.1, 10.2 and 10.3 of this Agreement and the other Warrant Agreements shall expire and terminate at such time as Ryan Beck, or its successors, shall have received from counsel to the Company an unqualified written opinion of such counsel that the Holders of the Warrant Agreements have the right, pursuant to the provision of Rule 144 under the Act, to sell within any three month period from the date of the opinion all of the Total Warrant Shares then held and purchasable upon exercise of the warrants issued under the Warrant Agreements by such Holders of the Warrant Agreements.

10.3 Covenants of the Company With Respect to Registration. In connection with any registration under Section 10.1 or 10.2 hereof, the Company covenants and agrees as follows:

(a) The Company shall use its reasonable efforts to file a registration statement demanded under Section 10.2(a) hereof within fifty (50) days of receipt of any demand therefor, shall use its

reasonable efforts to have any registration statements declared effective at the earliest possible time, and shall furnish each of the Holders of the Warrant Agreements desiring to sell all or any portion of the Total Warrant Shares under such registration statement such number of prospectuses as shall reasonably be requested.

(b) The Company shall pay all costs (excluding fees and expenses of Holder(s)' counsel and any underwriting or selling commissions which shall be paid by the Holders of the Warrant Agreements), fees and expenses in connection with all registration statements filed pursuant to Section 10.1 and 10.2(a) hereof including, without limitation, the Company's legal and accounting fees, printing expenses, blue sky fees and expenses.

(c) The Company will take all necessary action which may be required in qualifying or registering the Warrant Shares included in a registration statement for offering and sale under the securities or blue sky laws of such states as reasonably are requested by the Holder(s), provided that the Company shall not be obligated to execute or file any general consent to service of process or to qualify as a foreign corporation to do business under the laws of any such jurisdiction.

(d) Nothing contained in this Agreement shall be construed as requiring the Holders of the Warrant Agreements to exercise their Warrants prior to the initial filing of any registration statement or the effectiveness thereof.

(e) The Company shall deliver promptly to each of the Holders of the Warrant Agreements participating in the offering requesting the correspondence and memoranda described below copies of all correspondence between the Commission and the Company, its counsel or auditors and all memoranda relating to discussions with the Commission or its staff with respect to the registration statement.

#### 10.4 Indemnification.

(a) Subject to the terms of this Section 10, the Company will indemnify and hold harmless the Holders of the Warrant Agreements participating in the offerings covered by Sections 10.1 or 10.2., its directors and officers, and each person, if any, who controls such holders within the meaning of Section 15 of the Act or Section 20(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), from and against, and will reimburse such holders and each such controlling person with respect to, any and all loss, damage, liability, cost and expense to which such holder or controlling person may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in a Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss, damage, liability, cost or expense arises out of, or is

based upon, an untrue statement or alleged untrue statement or omission or alleged omission so made in

conformity with information furnished by such holders or such controlling person in writing specifically for use in the preparation thereof.

(b) Subject to the terms of this Section 10, each of the Holders of the Warrant Agreements will severally, and not jointly, indemnify and hold harmless the Company, its directors and officers, any controlling person and any underwriter from and against, and will reimburse the Company, its directors and officers, any controlling person and any underwriter with respect to, any and all loss, damage, liability, cost or expense to which the Company or any controlling person and/or any underwriter may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in such Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was so made in reliance upon, and in strict conformity with, written information furnished by, or on behalf of, the Holders of the Warrant Agreements specifically for use in the preparation thereof.

(c) Promptly after receipt by an indemnified party pursuant to the provisions of Section 10.4(a) or 10.4(b) of notice of the commencement of any action involving the subject matter of the foregoing indemnity provisions, such indemnified party will, if a claim thereof is to be made against the indemnifying party pursuant to the provisions of Section 10.4(a) or 10.4(b), promptly notify the indemnifying party of the commencement thereof; but the omission to so notify the indemnifying party will not relieve the indemnifying party from any liability which it may have to any indemnified party otherwise than hereunder. In case such action is brought against any indemnified party and the indemnified party notifies the indemnifying party of the commencement thereof, the indemnifying party shall have the right to participate in, and, to the extent that it may wish, assume the defense thereof; or, if there is a conflict of interest which would prevent counsel for the indemnifying party from also representing the indemnified party, (or, in the event that the indemnified party and the indemnifying party are both named as parties in the action and it is reasonably determined, in good faith, by counsel for the indemnified party and counsel for the indemnifying party that there is such a conflict) the indemnified parties have the right to select only one (1) separate counsel to participate in the defense of such action on behalf of all such indemnified parties. After notice from the indemnifying parties to such indemnified party of the indemnifying parties' election so to assume the defense thereof, the indemnifying parties will not be liable to such indemnified parties pursuant to the provisions of said Section 10.4(a) or 10.4(b) for any legal or other expense subsequently incurred by such indemnified parties in connection with the defense thereof, other than reasonable costs of investigation, unless (a) the indemnified parties shall have employed counsel in accordance with the provisions of the preceding sentence; (b) the indemnifying parties shall not have employed counsel satisfactory to the indemnified parties to represent the indemnified parties within a reasonable time after the notice of the commencement of the action

or (c) the indemnifying party has authorized the employment of counsel for the indemnified party at the expense of the indemnifying parties.

10.5 Majority. For purposes of this Agreement, the term "Majority" in reference to the Holders of the Warrant Agreements, shall mean in excess of fifty percent (50%) of the then outstanding warrants issued under the Warrant Agreements or Total Warrant Shares that (y) are not held by the Company, an affiliate, officer, creditor, employee or agent thereof or any of their respective affiliates, members of their family,

persons acting as nominees or in conjunction therewith and (z) have not been resold to the public pursuant to a registration statement filed with the Commission under the Act.

11. Adjustments to Exercise Price and Number of Securities.

11.1 Subdivision and Combination. In case the Company shall at any time subdivide or combine the outstanding shares of Common Stock, the Exercise Price shall forthwith be proportionately decreased in the case of subdivision or increased in the case of combination.

11.2 Stock Dividends and Distributions. If the Company at any time, or from time to time, while the Warrants are outstanding shall declare or pay, without consideration, any dividend on the Common Stock payable in Common Stock, then the Exercise Price shall be proportionately decreased.

11.3 Adjustment in Number of Securities. Upon each adjustment of the Exercise Price pursuant to the provisions of this Section 11, the number of Warrant Shares issuable upon the exercise at the adjusted exercise price of each Warrant shall be adjusted to the nearest full amount by multiplying a number equal to the Exercise Price in effect immediately prior to such adjustment by the number of Warrant Shares issuable upon exercise of the Warrants immediately prior to such adjustment and dividing the product so obtained by the adjusted Exercise Price.

11.4 Definition of Common Stock. For the purpose of this Agreement, the term "Common Stock" shall mean (i) the Common Stock or (ii) the class of stock designated as Common Stock in the Articles of Incorporation of the Company as may be amended as of the date hereof, or (ii) any other class of stock resulting from successive changes or reclassifications of such Common Stock consisting solely of changes in par value, or from par value to no par value, or from no par value to par value.

11.5 Merger or Consolidation. In case of any consolidation of the Company with, or merger of the Company with, or merger of the Company into, another corporation (other than a consolidation or merger in which the Company is the surviving entity), the corporation formed by such consolidation or merger shall execute and deliver to the Holder a supplemental warrant agreement providing that the holder of each Warrant then outstanding or to be outstanding shall have the right thereafter (until the expiration of such Warrant) to receive, upon exercise of such Warrant, the kind and amount of shares of stock and other

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securities and property receivable upon such consolidation or merger, by a holder of the number of shares of Common Stock of the Company for which such warrant might have been exercised immediately prior to such consolidation, merger, sale or transfer. Such supplemental warrant agreement shall provide for adjustments which shall be identical to the adjustments provided in Section 11. The above provision of this subsection shall similarly apply to successive consolidations or mergers.

11.6 No Adjustment of Exercise Price in Certain Cases. No adjustment of the Exercise Price shall be made:

(a) Upon the issuance or sale of the Warrants or the shares of Common Stock issuable upon the exercise of the Warrants;

(b) If the amount of said adjustment shall be less than two cents (2 cents) per Warrant Share, provided, however, that in such case any adjustment that would otherwise be required then to be made shall be carried forward and shall be made at the time of and together with the next subsequent adjustment which, together with any adjustment so carried forward, shall amount to at least two cents (2



cents) per Warrant Share.

12. Exchange and Replacement of Warrant Certificates. Each Warrant Certificate is exchangeable without expense, upon the surrender thereof by the registered Holder at the principal executive office of the Company, for a new Warrant Certificate of like tenor and date representing in the aggregate the right to purchase the same number of Warrant Shares in such denominations as shall be designated by the Holder thereof at the time of such surrender.

Upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of any Warrant Certificate, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it, and reimbursement to the Company of all reasonable expense incidental thereto, and upon surrender and cancellation of the Warrants, if mutilated, the Company will make and deliver a new Warrant Certificate of like tenor, in lieu thereof.

13. Elimination of Fractional Interests. The Company shall not be required to issue certificates representing fractions of shares of Common Stock upon the exercise of the Warrants, nor shall it be required to issue scrip or pay cash in lieu of fractional interests, it being the intent of the parties that all fractional interests shall be eliminated by rounding any fraction up to the nearest whole number of shares of Common Stock or other securities, properties or rights.

14. Reservation and Listing of Securities. The Company shall at all times reserve and keep available out of its authorized shares of Common Stock, solely for the purpose of issuance upon the exercise of the Warrants, such number of shares of Common Stock or other securities, properties or rights as shall be issuable upon the exercise thereof. The Company covenants and agrees that, upon exercise of the Warrants and payment of the Exercise Price therefor, all shares of Common Stock and other securities issuable upon such exercise shall be duly and validly issued, fully paid, non-assessable and not subject to the preemptive

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rights of any stockholder. As long as the Warrants shall be outstanding, the Company shall use its reasonable efforts to cause all shares of Common Stock issuable upon the exercise of the Warrants to be listed (subject to official notice of issuance) on all securities exchanges on which the Common Stock issued to the public in connection herewith may then be listed and/or quoted.

15. Notices to Warrant Holders. Nothing contained in this Agreement shall be construed as conferring upon the Holder the right to vote or to consent or to receive notice as a stockholder in respect of any meetings of stockholders for the election of directors or any other matter, or as having any rights whatsoever as a stockholder of the Company. If, however, at any time prior to the expiration of the Warrants and their exercise, any of the following events shall occur:

(a) the Company shall take a record of the holders of its shares of Common Stock for the purpose of entitling them to receive a dividend or distribution payable otherwise than in cash, or a cash dividend or distribution payable otherwise than out of current or retained earnings, as indicated by the accounting treatment of such dividend or distribution on the books of the Company; or

(b) the Company shall offer to all the holders of its Common Stock any additional shares of capital stock of the Company or securities convertible into or exchangeable for shares of capital stock of the Company, or any option, right or warrant to subscribe therefor; or

(c) a dissolution, liquidation or winding up of the Company (other than in connection with a consolidation or merger) or a sale of all or substantially all of its property, assets and business as an

entirety shall be proposed;

then, in any one or more of said events, the Company shall give written notice of such event at least fifteen (15) days prior to the date fixed as a record date or the date of closing the transfer books for the determination of the stockholders entitled to such dividend, distribution, convertible or exchangeable securities or subscription rights, or entitled to vote on such proposed dissolution, liquidation, winding up or sale. Such notice shall specify such record date or the date of closing the transfer books, as the case may be. Failure to give such notice or any defect therein shall not affect the validity of any action taken in connection with the declaration or payment of any such dividend, or the issuance of any convertible or exchangeable securities, or subscription rights, options or warrants, or any proposed dissolution, liquidation, winding up or sale.

16. Notices. All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

(a) If to a registered holder of the Warrants, to the address of such holder as shown on the books of the Company; or

(b) If to the Company, to the address set forth in Section 5 hereof or to such other address as the Company may designate by notice to the Holder; or

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(c) If to Ryan Beck, to Ryan, Beck & Co., LLC, 200 Park Avenue, New York, NY 10166, Attention Randy F. Rock.

17. Supplements and Amendments. The Company and Ryan Beck may from time to time supplement or amend this Agreement without the approval of any holder of the Warrants in order to cure any ambiguity, to correct or supplement any provision contained herein which may be defective or inconsistent with any provisions herein, or to make any other provisions in regard to matters or questions arising hereunder which the Company and Ryan Beck may deem necessary or desirable and which the Company and Ryan Beck deem shall not adversely affect the interests of the Holders of the Warrant Agreements.

18. Successors. All the covenants and provisions of this Agreement shall be binding upon and inure to the benefit of the Company, the Holder and their respective successors and assigns hereunder.

19. Termination. This Agreement shall terminate at the close of business on January 31, 2006.

20. Governing Law; Submission to Jurisdiction. This Agreement and each Warrant Certificate issued hereunder shall be deemed to be a contract made under the laws of the State of Delaware and for all purposes shall be construed in accordance with the laws of said State without giving effect to the rules of said State governing the conflicts of laws.

The Company and the Holder hereby agree that any action, proceeding or claim against it arising out of, or relating in any way to, this Agreement shall be brought and enforced in the federal courts located in Wilmington, Delaware, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company and the Holder hereby irrevocably waive any objection to such exclusive jurisdiction or inconvenient forum. Any such process or summons to be served upon any of the Company and the Holder (at the option of the party bringing such action, proceeding or claim) may be served by transmitting a copy thereof, by registered or certified mail, return receipt requested, postage prepaid, addressed to it at the

address set forth in Section 16 hereof. Such mailing shall be deemed personal service and shall be legal and binding upon the party so served in any action, proceeding or claim. The Company and the Holder agree that the prevailing party(ies) in any such action or proceeding shall be entitled to recover from the other party(ies) all of its/their reasonable legal costs and expenses relating to such action or proceeding and/or incurred in connection with the preparation therefor.

21. Entire Agreement; Modification. This Agreement contains the entire understanding between the parties hereto with respect to the subject matter hereof and may not be modified or amended except by a writing duly signed by the party against whom enforcement of the modification or amendment is sought.

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22. Severability. If any provision of this Agreement shall be held to be invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision of this Agreement.

23. Captions. The caption headings of the Sections of this Agreement are for convenience of reference only and are not intended, nor should they be construed as, a part of this Agreement and shall be given no substantive effect.

24. Benefits of this Agreement. Nothing in this Agreement shall be construed to give to any person or corporation other than the Company and the Holder any legal or equitable right, remedy or claim under this Agreement; and this Agreement shall be for the sole benefit of the Company and the Holder and any other registered holder.

25. Counterparts. This Agreement may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original, and such counterparts shall together constitute but one and the same instrument.

26. Assignment. This Agreement may not be assigned by the Holder without prior written consent of all parties hereto. The Warrants granted hereunder may be assigned in part, or in whole if prior to any such assignment the assignee executes and delivers to the Company a Certification, the form and content of which must be satisfactory to the Company, in which such assignee represents to the Company that such assignee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such assignee is an accredited investor, and that such assignee is acquiring such designated Warrants for the assignees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and such assignee shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the assignee.

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IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed, as of the day and year first above written.

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

By: /s/ Richard T. Kelecy  
Richard T. Kelecy  
Vice President and Chief Financial Officer

RYAN, BECK & CO., LLC

By: /s/ Randy Rock  
Name: Randy F. Rock  
Title: Managing Director

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.**

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS AND CONDITIONS, INCLUDING REGARDING PARTIAL CANCELLATION, SET FORTH IN THAT CERTAIN WARRANT AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.**

**COMMON STOCK PURCHASE WARRANT CERTIFICATE**

**Dated: January 31, 2001**

**Thirty Four Thousand Twenty Eight (34,028) Warrants  
to purchase Thirty Four Thousand Twenty Eight (34,028)  
Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:30 P.M., NEW YORK TIME**

**on**

**January 31, 2006**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**, a Delaware corporation (the "Company"), hereby certifies that RYAN, BECK & CO., LLC, and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time after the date hereof, until 5:30 p.m., New York Time on January 31, 2006, up to an aggregate of Thirty Four Thousand Twenty Eight (34,028) shares (the "Shares" or "Warrant Shares") of the Company's common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.44 per share (the "Per Share Exercise Price") subject to adjustment as provided in that certain Warrant Agreement of even date herewith between the Company and the Holder.

1. **Exercise of Warrant.** Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the Election to Purchase or Assign form duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32606-1649, together with (a) cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased or (b) Warrants to be surrendered pursuant to a cashless exercise as described in Section 5.2 of the Warrant Agreement (either, the "Aggregate Exercise Price"), the Company, or the Company's transfer agent, as the case may be, shall deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. All or less than all of the Warrants represented by this Certificate may be exercised and, in case of the exercise of less than all, the Company, upon surrender hereof, will deliver to the Warrant Holder a new Warrant Certificate or Certificates of like tenor and dated the date hereof entitling said Warrant Holder to purchase the number of Warrant Shares represented by this Certificate which have not been exercised or surrendered and to receive the Registration Rights set forth in Section 8 below (to the extent such rights have not already been exercised) with respect to such Warrant Shares.

2. **Exchange and Transfer.** This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Certificate or Certificates of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares as the Certificate or Certificates surrendered.

3. **Rights and Obligations of Warrant Holder of this Certificate.** The Holder of this Certificate shall not, by virtue hereof, be entitled to any rights of a stockholder in the Company, either at law or in equity; provided, however, that in the event any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder shall, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Purchase form, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by his acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder of this Certificate, by accepting the same, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner for all purposes whatsoever, and the Company shall not be affected by any notice to the contrary.

4. **Issuance of Certificates.** As soon as practicable after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder

of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Per Share Exercise Price. All such certificates shall bear a restrictive legend to the effect that, subject to the provisions of Section 8 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration and qualification or an exemption thereof, such legend to be substantially in the form of the bold face language appearing on page 1 of this Warrant Certificate.

5. **Disposition of Warrants or Shares.**

a. The Holder of this Warrant Certificate, by his acceptance thereof, agrees that (i) no public distribution of Warrants or Shares will be made in violation of the provisions of the Securities Act of 1933, as amended, and the Rules and Regulations promulgated thereunder (collectively, the "Act"), and (ii) during such period as delivery of a prospectus with respect to Warrants or Shares may be required by the Act, no public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The holder this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that prior written consent to such transfer be obtained from the Company after

delivery to the Company of a Certification and agreement as defined in Section 26 of the Warrant Agreement.

b. By acceptance hereof, the Holder represents and warrants that this Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear the following legend:

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The securities represented by this certificate have not been registered under the Securities Act of 1933 and are restricted securities within the meaning thereof. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act which is effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that such sale or transfer is exempt from the registration requirements of such Act.

6. **Warrant Holder Not Shareholder**. This Warrant Certificate shall not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

7. **Registration Rights**. The Company agrees that the Warrant Shares shall have those registration rights set forth in Section 10 of the Warrant Agreement.

8. **Notices**. All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

If to the Company:	Perma-Fix Environmental Services, Inc. 1940 Northwest 67th Place Gainesville, Florida 32606-1649 Attention: Dr. Louis F. Centofanti Chief Executive Officer
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with copies simultaneously by like means to:	Conner & Winters One Leadership Square, Suite 1700 211 North Robinson Oklahoma City, Oklahoma 73102 Attention: Irwin H. Steinhorn, Esquire
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If to the Holder:	Ryan, Beck & Co., LLC
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200 Park Avenue  
New York, New York 10166  
Attention: Randy Rock

9. **Governing Law.** This Warrant Certificate and all rights and obligations hereunder shall be deemed to be made under and governed by the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

10. **Successors and Assigns.** This Warrant Certificate shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

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11. **Headings.** The headings of various sections of this Warrant Certificate have been inserted for reference only and shall not be a part of this Agreement.

12. **Subject to Warrant Agreement.** This Warrant Certificate is subject to the terms and conditions set forth in the Warrant Agreement. In the event of a conflict between this Warrant and the Warrant Agreement, the Warrant Agreement shall control.

**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of January 31, 2001.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By: /s/ Richard T. Kelecy  
Richard T. Kelecy  
Vice President and Chief Financial Officer

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THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.

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PERMA-FIX ENVIRONMENTAL SERVICES, INC.

RYAN, BECK & CO., LLC

WARRANT AGREEMENT

Dated as of March 9, 2001

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WARRANT AGREEMENT, dated as of March 9, 2001 (the "Agreement"), by and between PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Company") and RYAN, BECK & CO., LLC ("Ryan Beck" or "Holder").

W I T N E S S E T H:

WHEREAS, the Company proposes to issue to the Holder, or subject to the terms hereof, those permitted designees, warrants ("Warrants") to purchase up to an aggregate 24,306 shares of common stock of the Company, par value \$.001 per share ("Common Stock");

WHEREAS, this Agreement is one of nine warrant agreements (collectively, the "Warrant Agreements") issued by the Company to Ryan Beck, Larkspur Capital Corporation ("Larkspur") and certain of their officers and/or directors, with all such Warrant Agreements dated as of March 9, 2001, allowing the holders (collectively, the "Holders of the Warrant Agreements") under all of the Warrant Agreements to purchase up to an aggregate of 121,528 shares of Common Stock (the "Total Warrant Shares"), pursuant to the terms of a letter agreement, dated January 25, 2000 (the "Letter Agreement"), among the Company, Ryan Beck and Larkspur, whereby Ryan Beck and Larkspur have agreed to provide certain financial services to the Company;

WHEREAS, the Company proposes to issue the Warrants to the Holder and enter into all of the Warrant Agreements, as a part of the retainer for the services to be provided under the Letter Agreement;

WHEREAS, the Holder is an "accredited investor," as such term is defined in Rule 501 of Regulation D promulgated under the Securities Act of 1933, as amended (the "Act");

WHEREAS, if the Holder designates any other party as a designee for the purpose of receiving any portion of the Warrants pursuant to the terms hereof, then, prior to receiving any of the Warrants as designee of the Holder, such designee must execute and deliver to the Company a written certification ("Certification"), the form and content of which must be satisfactory to the Company, in which such designee represents to the Company that such designee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such designee is an accredited investor, and that such designee is acquiring such designated Warrants for the designees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the designee;

WHEREAS, the Common Stock is listed for trading on the Boston Stock Exchange and the National Association of Securities Dealers Automated Quotation SmallCap market ("NASDAQ"), and the Company is subject to the reporting requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and has been subject to such filing requirements for the past ninety (90) days; and

WHEREAS, in reliance upon the representations made by the Holder in this Agreement and the Holders of the Warrant Agreements in all of the other Warrant Agreements, the transactions contemplated by this Agreement and all of the Warrant Agreements, are such that the offer and purchase of securities hereunder will be exempt from registration under applicable federal securities laws because this is a private placement and intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Securities Act and/or Regulation D promulgated under the Act.

NOW, THEREFORE, in consideration of the premises, the payment by Ryan Beck and Larkspur to the Company of an aggregate of one dollar and twenty-two cents (\$1.22), the agreements herein set forth and other good and valuable consideration, hereby acknowledged, the parties hereto agree as follows:

1. Grant. The Holder is hereby granted Warrants providing the right to purchase, at any time and from the date hereof until 5:30 p.m., New York time, on March 9, 2006, up to an aggregate of 24,306 shares of Common Stock (the "Warrant Shares") at an initial exercise price (subject to adjustment as provided in Section 11 hereof) of \$1.44 per share of Common Stock subject to the terms and conditions of this Agreement. Except as set forth herein, the Warrant Shares issuable upon exercise of the Warrants are in all respects identical to the shares of Common Stock that have been issued to the public.

2. Warrant Certificate. The warrant certificates (the "Warrant Certificate") delivered and to be delivered pursuant to this Agreement shall be in the form set forth in Exhibit A, attached hereto and made a part hereof, with such appropriate insertions, omissions, substitutions, and other variations as required or permitted by this Agreement. There shall be one Warrant Certificate issued to the Holder hereunder in the amount of 34,028 Warrants.

3. Representations, Warranties and Covenants of Holder. The Holder of Warrants and/or Warrant Shares hereby represents, warrants and covenants to the Company as follows:

being, 3.1 Investment Intent. The Holder represents and warrants that the Warrants are  
such and any underlying Warrant Shares will be, purchased or acquired solely for  
the Holder's own account, for investment purposes only and not with a view toward  
distribution or resale to others. The Holder acknowledges and understands that  
neither the Warrants nor Warrant Shares have been registered under the Act by  
reason of a claimed exemption under the provisions of the Act which depends, in  
large part, upon the Holder's representations as to investment intention, investor  
status, and related and other matters set forth herein. The Holder understands  
that, in the view of the Securities and Exchange Commission (the "Commission"),  
among other things, a purchase with an intent to distribute or resell would represent a  
purchase and acquisition with an intent inconsistent with its representation to the  
Company, and the Commission might regard such a transfer as a deferred sale  
for which the registration exemption is not available.

Warrant 3.2 Certain Risk. The Holder recognizes that the purchase of the Warrants or  
an Shares involves a high degree of risk in that (a) although the Company has had  
sustain unaudited net income for the nine month period ended September 30, 2000, and  
audited net income for the year ended December 31, 1999 the Company did  
losses through December 31, 1998, from its operations, and may require  
substantial funds for its operations; (b) that the Company has a substantial  
accumulated deficit; (c) an investment in the Company is highly speculative  
and only investors who can afford the loss of their entire investment should  
consider investing in the Company and the Warrants or Warrant Shares; (d) an  
investor may not be able to liquidate his investment; (e) transferability of the  
Warrants or Warrant Shares is extremely limited; (f) in the event of a disposition  
an investor could sustain the loss of his entire investment; (g) the Warrants  
represent non-voting equity securities, and the right to exercise such Warrants  
and purchase shares of voting equity securities in a corporate entity that has  
an accumulated deficit; (h) no return on investment, whether through  
distributions, appreciation, transferability or otherwise, and no performance  
by, through or of the Company, has been promised, assured, represented  
or warranted by the Company, or by any director, officer, employee,  
agent or representative thereof; and, (i) while the Common Stock is

and

while the Holder is a beneficiary of certain registration rights provided herein, the Warrants subscribed for and that are purchased under this Agreement and the Warrant Shares (a) are not registered under applicable federal or state securities laws, and thus may not be sold, conveyed, assigned or transferred unless registered under such laws or unless an exemption from registration is available under such laws, as more fully described herein, and (b) the Warrants subscribed for and that are to be purchased under this Agreement are not quoted, traded or listed for trading or quotation on the NASDAQ, or any other organized market or quotation system, and there is therefore no present public or other market for the Warrants, nor can there be any assurance that the Common Stock will continue to be quoted, traded or listed for trading or quotation on the Boston Stock Exchange or the NASDAQ or on any other organized market or quotation system.

3.3 Prior Investment Experience. The Holder acknowledges that Holder has prior investment experience, including investment in non-listed and non-registered securities, or Holder has employed the services of an investment advisor, attorney or accountant to read all of the documents furnished or made available by the Company to them and to evaluate the merits and risks of such an investment on Holder's behalf, and that Holder recognizes the highly speculative nature of this investment.

3.4 No Review by the Commission. The Holder hereby acknowledges that this offering of the Warrants has not been reviewed by the Commission because this private placement is intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Act and/or Regulation D promulgated under the Act.

3.5 Not Registered. The Holder understands that the Warrants and the Warrant Shares have not been registered under the Act by reason of a claimed exemption under the provisions of the Act which depends, in part, upon the Holder's investment intention. In this connection, the Holder understands that it is the position of the Commission that the statutory basis for such exemption would not be present if Holder's representations merely meant that Holder's intention was to hold such securities for a short period, such as the capital gains period of tax statutes, for a deferred sale, for a market rise (assuming that a market develops), or for any other fixed period.

3.6 No Public Market. The Holder understands that there is no public market for the Warrants. The Holder understands that although there is presently a public market for the Common Stock, including the Warrant Shares, Rule 144 (the "Rule")

promulgated under the Act requires, among other conditions, a one-year holding period following full payment of the consideration therefor prior to the resale (in limited amounts) of securities acquired in a nonpublic offering without having to satisfy the registration requirements under the Act. The Holder understands that the Company makes no representation or warranty regarding its fulfillment in the future of any reporting requirements under the Exchange Act, or its dissemination to the public of any current financial or other information concerning the Company, as is required by the Rule as one of the conditions of its availability. The Holder understands and hereby acknowledges that the Company is under no obligation to register the Warrants or the Warrant Shares under the Act, except as set forth in Section 10 hereof.

- 3.7 Sophisticated Investor. The Holder (a) has adequate means of providing for the Holder's current financial needs and possible contingencies and has no need

for

liquidity of the Holder's investment in the Warrants; (b) is able to bear the economic risks inherent in an investment in the Warrants and understands that an important consideration bearing on Holder's ability to bear the economic risk of the purchase of Warrants is whether the Holder can afford a complete loss of the Holder's investment in the Warrants and the Holder represents and warrants that the Holder can afford such a complete loss; and (c) has such knowledge and experience in business, financial, investment and banking matters (including, but not limited to, investments in restricted, non-listed and non-registered securities) that the Holder is capable of evaluating the merits, risks and advisability of an investment in the Warrants.

- 3.8 Tax Consequences. The Holder acknowledges that the Company has made no representation regarding the potential or actual tax consequences for the Holder which will result from entering into the Agreement. The Holder acknowledges

that

the Holder bears complete responsibility for obtaining adequate tax advice regarding the Agreement.

- 3.9 Commission Filing. The Holder acknowledges that Holder has been previously furnished with true and complete copies of the following documents which have been filed with the Commission pursuant to Sections 13(a), 14(a), 14(c) or 15(d) of the Exchange Act, and that such have been furnished to the Holder a reasonable time prior to the date hereof: (i) Annual Report on Form 10-K for the year ended December 31, 1999 (the "Form 10-K"), as may be amended; (ii) the Company's Proxy Statement delivered to shareholders on or about November 13, 2000; and (iii) the information contained in any reports or

documents required to be filed by the Company under Sections 13(a), 14(a), 14(c) or 15(d) of the Exchange Act since the distribution of the Form 10-K.

- the
- 3.10 Documents, Information and Access. The Holder's decision to purchase the Warrants are not based on any promotional, marketing or sales materials, and Holder and the Holder's representatives have been afforded, prior to purchase thereof, the opportunity to ask questions of, and to receive answers from, the Company and its management, and has had access to all documents and information which Holder deems material to an investment decision with respect to the purchase of Warrants hereunder.
- 3.11 No Commission. The Holder agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the subscription described hereunder.
- 3.12 Accredited Investor. The Holder is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act as follows:
- 3.12.1 Natural Person. If the Holder is a natural person, such person (i) has an individual net worth, or joint net worth with such person's spouse at the time of the purchase described hereunder, in excess of \$1,000,000 or (ii) had individual income in excess of \$200,000 in each of the two most recent years or joint income with such person's spouse in excess of \$300,000 in each of those years and has a reasonable expectation of reaching the same income level in the current year.
- 3.12.2 Corporation. If the Holder is a corporation, such corporation has total assets in excess of \$5,000,000 and was not formed for the specific purpose of acquiring the Warrants or the Warrant Shares.
- 3.12.3 Trust. If the Holder is a trust, such must be (i) a revocable or grantor trust and each person with the power to revoke the trust must qualify as an accredited investor under Section 3.12.1 or 3.12.2 above and/or (ii) a trust with total assets in excess of \$5,000,000, not formed for the specific purpose of acquiring the securities offered and whose purchase is directed by a sophisticated person as described in Section Section 3.7 hereof.
- 3.13 Reliance. The Holder understands and acknowledges that the Company is relying upon all of the representations, warranties, covenants, understandings, acknowledgments and agreements contained in this Agreement in determining

whether to accept this subscription and to sell and issue the Warrants to the Holder.

- 3.14 Accuracy or Representations and Warranties. All of the representations, warranties, understandings and acknowledgments that Holder has made herein are true and correct in all material respects as of the date of execution hereof. The Holder will perform and comply fully in all material respects with all covenants and

agreements set forth herein, and the Holder covenants and agrees that until the acceptance of this Agreement by the Company, the Holder shall inform the Company immediately in writing of any changes in any of the representations or warranties provided or contained herein.

4. Representations, Warranties and Covenants of the Company. In order to induce Holder to enter into this Agreement, the Company hereby represents, warrants and covenants to Holder as follows:

- 4.1 Organization, Authority, Qualification. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Delaware. The Company has full corporate power and authority to own and operate its properties and assets and to conduct and carry on its business as it is now being conducted and operated.
- 4.2 Authorization. The Company has full power and authority to execute and deliver this Agreement and to perform its obligations under and consummate the transactions contemplated by this Agreement. Upon the execution of this Agreement by the Company and delivery of the Warrants, this Agreement shall have been duly and validly executed and delivered by the Company and shall constitute the legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms.
- 4.3 No Commission. The Company agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the issuance of the Warrants.
- 4.4 Ownership of, and Title to, Securities. The Warrant Shares, if issued, will be, duly authorized, validly issued, fully paid and nonassessable shares of the capital stock of the Company, free of personal liability. Upon consummation of the issuance of the Warrants (and upon the exercise of the Warrants, in whole or in part) pursuant to this Agreement, the Holder will own and acquire title to the Warrants (and the Warrant Shares, as the case may be) free and clear of any and all proxies, voting trusts, pledges, options, restrictions, or other legal or equitable encumbrance of any

nature whatsoever (other than the restrictions on transfer due to federal and state securities laws or as otherwise provided for in this Agreement or in the Warrants).

5. Exercise of Warrant.

5.1 Method of Exercise. Subject to the terms hereof, the Warrants initially are exercisable at an aggregate initial exercise price per share of Common Stock set forth in Section 9.1 hereof payable by certified or cashier's check in New York Clearing House funds, subject to adjustment as provided in Section 11 hereof. Upon surrender of a Warrant Certificate with the annexed Form of Election to Purchase duly executed, together with payment of the Exercise Price (as hereinafter defined) for the shares of Common Stock purchased pursuant to the terms hereof, at the Company's principal offices (presently located at 1940 NW 67<sup>th</sup> Place, Gainesville, FL 32653) the Holder shall be entitled to receive a certificate or certificates for the shares of Common Stock so purchased. The purchase rights represented by each Warrant Certificate are exercisable at the option of the Holder thereof, in whole or in part (but not as to fractional shares of the Common Stock underlying the Warrants). Warrants may be exercised to purchase all or part of the shares of



Common Stock represented thereby. In the case of the purchase of less than all the shares of Common Stock purchasable under any Warrant Certificate, the Company shall cancel said Warrant Certificate upon the surrender thereof and shall execute and deliver a new Warrant Certificate of like tenor for the balance of the shares of Common Stock purchasable thereunder.

5.2 Exercise by Surrender of Warrants. In addition to the method of payment set forth in Section 5.1 and in lieu of any cash payment required thereunder, subject to the terms hereof, the Holder of the Warrants shall have the right at any time and from time to time to exercise the Warrants held by such Holder in full or in part by surrendering a Warrant Certificate in the manner specified in Section 5.1 in exchange for the number of Warrant Shares equal to the product of (x) the number of Warrant Shares as to which the Warrants are being exercised multiplied by (y) a fraction, the numerator of which is the Market Price (as defined in Section 5.3 below) of the Warrant Shares less the Exercise Price and the denominator of which is such Market Price. Solely for the purposes of this paragraph, Market Price shall be calculated as the average of the Market Prices for each of the five trading days preceding the Notice Date.

5.3 Definition of Market Price. As used herein, the phrase "Market Price" at any date shall be deemed to be the average closing bid quotation of the Company's Common Stock (i) as reported on the NASDAQ for the last five (5) trading days, or (ii) if the Common Stock is not traded on NASDAQ, the average closing price as listed on a national securities exchange for the last five (5) trading days, or (iii) if no longer traded on NASDAQ or listed on a national securities exchange, as determined in good faith by resolution of the Board of Directors of the Company, based on the best information available to it.

6. Issuance of Certificates. Upon the exercise of the Warrants or any portion thereof, the issuance of certificates for the Warrant Shares underlying such Warrants so exercised, shall be made forthwith (and in any event within five (5) business days thereafter) without charge to the Holder exercising such Warrants,

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including, without limitation, any tax which may be payable in respect of the issuance thereof, and such certificates shall be issued in the name of the Holder thereof.

The Warrants and the certificates representing the Warrant Shares shall be executed on behalf of the Company by the manual or facsimile signature of the then Chairman or Vice Chairman of the Board of Directors or President or Vice President of the Company.

7. Restriction on Transfer of Warrants or Warrant Shares. The Holder, by such Holder's acceptance hereof, covenants and agrees that the Warrants are being acquired as an investment and not with a view to the distribution thereof. The Holder, by such Holder's acceptance thereof, agrees that (i) no public distribution of Warrants or Warrant Shares will be made in violation of the provisions of the Act and the Rules and Regulations promulgated thereunder and (ii) during such period as delivery of a prospectus with respect to Warrants or Warrant Shares may be required by the Act, no public distribution of Warrants or Warrant Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The Holder and each permitted transferee thereof further agrees that if any distribution of any of the Warrants or Warrant Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, or an opinion of counsel reasonably satisfactory to the Company, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that any transferee thereof deliver to the Company his or its written agreement to accept and be bound by all of the terms and conditions contained in this Agreement. Any Warrant Shares issued upon exercise of the Warrants shall bear a legend to the

following effect:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

These securities are also subject to the registration rights set forth in that certain Warrant Agreement executed by Perma-Fix Environmental Services, Inc. (the "Company") and Ryan, Beck & Co. LLC, dated as of March 9, 2001, a copy of which is on file at the Company's Principal Executive Office.

8. Warrant Holder Not Shareholder. Neither this Agreement nor the Warrant Certificate shall be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Agreement or the Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

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9. Exercise Price.

9.1 Initial and Adjusted Exercise Price. Except as otherwise provided in Section 11 hereof, the initial exercise price of each Warrant shall be \$1.44 per share of Common Stock. The adjusted exercise price shall be the price which shall result from time to time from any and all adjustments of the initial exercise price in accordance with the provisions of Section 11 hereof.

9.2 Exercise Price. The term "Exercise Price" herein shall mean the initial exercise price or the adjusted exercise price, depending upon the context.

10. Registration Rights.

10.1 Piggyback Registration. Subject to the terms of this Section 10, if, at any time commencing after the date hereof and expiring seven (7) years from the effective date, the Company proposes to register any of its equity securities under the Act (other than a registration statement (i) on Form S-8 or any successor form to such form or in connection with any employee or director welfare, benefit or compensation plan, (ii) on Form S-4 or any successor form to such form or in connection with any merger, consolidation, acquisition or exchange offer, (iii) in connection with a rights offering exclusively to existing holders of Common Stock, (iv) in connection with an offering solely to employees of the Company or its subsidiaries, or (v) relating to a transaction pursuant to Rule 145 of the Act), it will give written notice by registered mail, at least thirty (30) days prior to the filing of each such registration statement, to the Holder of its intention to do so. If Holder notifies the Company within twenty (20) business days after receipt of any such notice of its desire to include any Warrant Shares held by such Holder or Warrant Shares underlying Warrants held by such Holder in such proposed registration statement, the Company shall afford any such Holder of the opportunity to have any such Warrant Shares held by such Holder or Warrant Shares underlying Warrants held by such Holder, registered under such registration statement (sometimes referred to herein as the "Piggyback Registration").

Notwithstanding the provisions of this Section 10.1, the Company shall have the right at any time after it shall have given written notice pursuant to this Section 10.1 (irrespective of whether a written request for inclusion of any such securities shall have been made) to elect not to file any such proposed registration statement, or to withdraw the same after the filing but prior to the effective date thereof.

If a Piggyback Registration is an underwritten primary registration on behalf of the Company, and the managing underwriters advise the Company in writing that in their reasonable opinion based upon market conditions the number of securities requested to be included in such registration exceeds the number that can be sold in such offering or would impair the pricing of such offering, the Company will include in such registration (i) first, the securities the Company proposes to sell, (ii) second, up to the full number of applicable Common Stock requested to be included in such registration by holders of Common Stock with

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prior or superior piggyback registration rights, (iii) third, the number of applicable Total Warrant Shares requested to be included in such registration, pro rata among the Holders of the Warrant Agreements on the basis of the number of shares requested by such Holders of the Warrant Agreements to be included and which, in the opinion of the managing underwriter, can be sold without adversely affecting the price range or probability of success of such offering, and (iv) fourth, other securities to be included in such registration.

### 10.2 Demand Registration.

(a) Subject to the terms of this Section 10, at any time after the date hereof and expiring five (5) years from the effective date, the Holders of the Warrant Agreements representing a "Majority" (as hereinafter defined) of the Total Warrant Shares (assuming the exercise of all the warrants issued under all of the Warrant Agreements) shall have the right (which right is in addition to the registration rights under Section 10.1 hereof), exercisable by written notice to the Company, to have the Company prepare and file with the Securities and Exchange Commission (the "Commission"), on one occasion only, a registration statement and such other documents, including a prospectus, as may be necessary in the opinion of both counsel for the Company and counsel for Ryan Beck, in order to comply with the provisions of the Act, so as to permit a public offering and the sale of their respective Total Warrant Shares for nine (9) consecutive months by such Holders of the Warrant Agreements notifying the Company within ten (10) days after receiving notice from the Company of such request.

(b) The Company covenants and agrees to give written notice of any registration request under this Section 10.2 by any of the Holders of the Warrant Agreements to all Holders of the Warrant Agreements within ten (10) days from the date of the receipt of any such registration request.

(c) Notwithstanding anything to the contrary contained herein, if the Company is obligated to file a registration statement covering all or a portion of the Total Warrant Shares under Section 10.2(a) but shall not have filed a registration statement for that portion (or all, as the case may be) of the Total Warrant Shares to be covered by the registration statement within the time period specified in Section 10.3 hereof pursuant to the written notice specified in Section 10.2(a) of a Majority of the Holders of the Warrant Agreements, which time period shall be extended pursuant to 10.2(d) below, the Company shall have the option, but not the obligation, upon the written notice of election of a Majority of the Holders of the Warrant Agreements to repurchase (i) any and all Warrant Shares at the higher of the Market Price per share of Common Stock on (y) the date of the notice sent pursuant to Section 10.2(a) or (z) the expiration of the period specified in Section 10.3(a) and (ii) any and all Warrants at such Market Price less the Exercise Price of such Warrants. Such repurchase shall be in immediately available funds and shall close within two (2) days after the later of (i) the expiration of the period specified in Section 10.3(a) or (ii) the delivery of the written notice of election specified in this Section 10.2(d). The Company shall have no obligation to exercise the option that may be granted pursuant to the terms of this paragraph (c) of Section 10.2 hereof.

(d) Notwithstanding anything to the contrary, the Company may delay the filing of a registration statement under this Section 10.2 and may withhold efforts to cause such registration statement to become effective if the Company determines in good faith that such registration might interfere with or affect the negotiation or completion of any material transaction or other material event that is being contemplated by the Company (whether or not a final decision has been made to undertake such material transaction at the time the right to delay is exercised). The Company may exercise such right to delay the filing or effectiveness of a registration statement two times and may delay the filing or effectiveness of such registration statement for not more than 90 days beyond the relevant period set forth in Section 10.3(a). Upon any delay by the Company pursuant to this Section 10.2(d) which lasts more than 60 days, the Majority of the Holders of the Warrant Agreements may rescind the notice given pursuant to Section 10.2(a), and the Holders of the Warrant Agreements will be deemed not to have exercised the right to effect the filing of a registration statement under Section 10.2(a) as a result of such notice.

(e) Notwithstanding anything herein to the contrary, the obligations of the Company and rights of the Holders of the Warrant Agreements under Sections 10.1, 10.2 and 10.3 of this Agreement and the other Warrant Agreements shall expire and terminate at such time as Ryan Beck, or its successors, shall have received from counsel to the Company an unqualified written opinion of such counsel that the Holders of the Warrant Agreements have the right, pursuant to the provision of Rule 144 under the Act, to sell within any three month period from the date of the opinion all of the Total Warrant Shares then held and purchasable upon exercise of the warrants issued under the Warrant Agreements by such Holders of the Warrant Agreements.

10.3 Covenants of the Company With Respect to Registration. In connection with any registration under Section 10.1 or 10.2 hereof, the Company covenants and agrees as follows:

(a) The Company shall use its reasonable efforts to file a registration statement demanded under Section 10.2(a) hereof within fifty (50) days of receipt of any demand therefor, shall use its reasonable efforts to have any registration statements declared effective at the earliest possible time, and shall furnish each of the Holders of the Warrant Agreements desiring to sell all or any portion of the Total Warrant Shares under such registration statement such number of prospectuses as shall reasonably be requested.

(b) The Company shall pay all costs (excluding fees and expenses of Holder(s)' counsel and any underwriting or selling commissions which shall be paid by the Holders of the Warrant Agreements), fees and expenses in connection with all registration statements filed pursuant to Section 10.1 and 10.2(a) hereof including, without limitation, the Company's legal and accounting fees, printing expenses, blue sky fees and expenses.

(c) The Company will take all necessary action which may be required in qualifying or registering the Warrant Shares included in a registration statement for offering and sale under the securities or blue sky laws of such states as reasonably are requested by the Holder(s), provided that the Company shall

not be obligated to execute or file any general consent to service of process or to qualify as a foreign corporation to do business under the laws of any such jurisdiction.

(d) Nothing contained in this Agreement shall be construed as requiring the Holders of the Warrant Agreements to exercise their Warrants prior to the initial filing of any registration statement or the effectiveness thereof.

(e) The Company shall deliver promptly to each of the Holders of the Warrant Agreements participating in the offering requesting the correspondence and memoranda described below copies of all correspondence between the Commission and the Company, its counsel or auditors and all memoranda relating to discussions with the Commission or its staff with respect to the registration statement.

#### 10.4 Indemnification.

(a) Subject to the terms of this Section 10, the Company will indemnify and hold harmless the Holders of the Warrant Agreements participating in the offerings covered by Sections 10.1 or 10.2., its directors and officers, and each person, if any, who controls such holders within the meaning of Section 15 of the Act or Section 20(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), from and against, and will reimburse such holders and each such controlling person with respect to, any and all loss, damage, liability, cost and expense to which such holder or controlling person may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in a Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss, damage, liability, cost or expense arises out of, or is based upon, an untrue statement or alleged untrue statement or omission or alleged omission so made in conformity with information furnished by such holders or such controlling person in writing specifically for use in the preparation thereof.

(b) Subject to the terms of this Section 10, each of the Holders of the Warrant Agreements will severally, and not jointly, indemnify and hold harmless the Company, its directors and officers, any controlling person and any underwriter from and against, and will reimburse the Company, its directors and officers, any controlling person and any underwriter with respect to, any and all loss, damage, liability, cost or expense to which the Company or any controlling person and/or any underwriter may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in such Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to

state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was so made in reliance upon, and in strict conformity with, written information furnished by, or on behalf of, the Holders of the Warrant Agreements specifically for use in the preparation thereof.

(c) Promptly after receipt by an indemnified party pursuant to the provisions of Section 10.4(a) or 10.4(b) of notice of the commencement of any action involving the subject matter of the foregoing indemnity provisions, such indemnified party will, if a claim thereof is to be made against the indemnifying party pursuant to the provisions of Section 10.4(a) or 10.4(b), promptly notify the indemnifying party of the commencement thereof; but the omission to so notify the indemnifying party will

not relieve the indemnifying party from any liability which it may have to any indemnified party otherwise than hereunder. In case such action is brought against any indemnified party and the indemnified party notifies the indemnifying party of the commencement thereof, the indemnifying party shall have the right to participate in, and, to the extent that it may wish, assume the defense thereof; or, if there is a conflict of interest which would prevent counsel for the indemnifying party from also representing the indemnified party, (or, in the event that the indemnified party and the indemnifying party are both named as parties in the action and it is reasonably determined, in good faith, by counsel for the indemnified party and counsel for the indemnifying party that there is such a conflict) the indemnified parties have the right to select only one (1) separate counsel to participate in the defense of such action on behalf of all such indemnified parties. After notice from the indemnifying parties to such indemnified party of the indemnifying parties' election so to assume the defense thereof, the indemnifying parties will not be liable to such indemnified parties pursuant to the provisions of said Section 10.4(a) or 10.4(b) for any legal or other expense subsequently incurred by such indemnified parties in connection with the defense thereof, other than reasonable costs of investigation, unless (a) the indemnified parties shall have employed counsel in accordance with the provisions of the preceding sentence; (b) the indemnifying parties shall not have employed counsel satisfactory to the indemnified parties to represent the indemnified parties within a reasonable time after the notice of the commencement of the action or (c) the indemnifying party has authorized the employment of counsel for the indemnified party at the expense of the indemnifying parties.

10.5 Majority. For purposes of this Agreement, the term "Majority" in reference to the Holders of the Warrant Agreements, shall mean in excess of fifty percent (50%) of the then outstanding warrants issued under the Warrant Agreements or Total Warrant Shares that (y) are not held by the Company, an affiliate, officer, creditor, employee or agent thereof or any of their respective affiliates, members of their family, persons acting as nominees or in conjunction therewith and (z) have not been resold to the public pursuant to a registration statement filed with the Commission under the Act.

#### 11. Adjustments to Exercise Price and Number of Securities.

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11.1 Subdivision and Combination. In case the Company shall at any time subdivide or combine the outstanding shares of Common Stock, the Exercise Price shall forthwith be proportionately decreased in the case of subdivision or increased in the case of combination.

11.2 Stock Dividends and Distributions. If the Company at any time, or from time to time, while the Warrants are outstanding shall declare or pay, without consideration, any dividend on the Common Stock payable in Common Stock, then the Exercise Price shall be proportionately decreased.

11.3 Adjustment in Number of Securities. Upon each adjustment of the Exercise Price pursuant to the provisions of this Section 11, the number of Warrant Shares issuable upon the exercise at the adjusted exercise price of each Warrant shall be adjusted to the nearest full amount by multiplying a number equal to the Exercise Price in effect immediately prior to such adjustment by the number of Warrant Shares issuable upon exercise of the Warrants immediately prior to such adjustment and dividing the product so obtained by the adjusted Exercise Price.

11.4 Definition of Common Stock. For the purpose of this Agreement, the term "Common Stock" shall mean (i) the Common Stock or (ii) the class of stock designated as Common Stock in the Articles of Incorporation of the Company as may be amended as of the date hereof, or (ii) any other class of stock resulting from successive changes or reclassifications of such Common Stock consisting solely of changes in par value, or from par value to no par value, or from no par value to par value.

11.5 Merger or Consolidation. In case of any consolidation of the Company with, or merger of the Company with, or merger of the Company into, another corporation (other than a consolidation or merger in which the Company is the surviving entity), the corporation formed by such consolidation or merger shall execute and deliver to the Holder a supplemental warrant agreement providing that the holder of each Warrant then outstanding or to be outstanding shall have the right thereafter (until the expiration of such Warrant) to receive, upon exercise of such Warrant, the kind and amount of shares of stock and other securities and property receivable upon such consolidation or merger, by a holder of the number of shares of Common Stock of the Company for which such warrant might have been exercised immediately prior to such consolidation, merger, sale or transfer. Such supplemental warrant agreement shall provide for adjustments which shall be identical to the adjustments provided in Section 11. The above provision of this subsection shall similarly apply to successive consolidations or mergers.

11.6 No Adjustment of Exercise Price in Certain Cases. No adjustment of the Exercise Price shall be made:

(a) Upon the issuance or sale of the Warrants or the shares of Common Stock issuable upon the exercise of the Warrants;

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(b) If the amount of said adjustment shall be less than two cents (2 cents) per Warrant Share, provided, however, that in such case any adjustment that would otherwise be required then to be made shall be carried forward and shall be made at the time of and together with the next subsequent adjustment which, together with any adjustment so carried forward, shall amount to at least two cents (2 cents) per Warrant Share.

12. Exchange and Replacement of Warrant Certificates. Each Warrant Certificate is exchangeable without expense, upon the surrender thereof by the registered Holder at the principal executive office of the Company, for a new Warrant Certificate of like tenor and date representing in the aggregate the right to purchase the same number of Warrant Shares in such denominations as shall be designated by the Holder thereof at the time of such surrender.

Upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of any Warrant Certificate, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it, and reimbursement to the Company of all reasonable expense incidental thereto, and upon surrender and cancellation of the Warrants, if mutilated, the Company will make and deliver a new Warrant Certificate of like tenor, in lieu thereof.

13. Elimination of Fractional Interests. The Company shall not be required to issue certificates representing fractions of shares of Common Stock upon the exercise of the Warrants, nor shall it be required to issue scrip or pay cash in lieu of fractional interests, it being the intent of the parties that all fractional interests shall be eliminated by rounding any fraction up to the nearest whole number of shares of Common Stock or other securities, properties or rights.

14. Reservation and Listing of Securities. The Company shall at all times reserve and keep available out of its authorized shares of Common Stock, solely for the purpose of issuance upon the exercise of the Warrants, such number of shares of Common Stock or other securities, properties or rights as shall be issuable upon the exercise thereof. The Company covenants and agrees that, upon exercise of the Warrants and payment of the Exercise Price therefor, all shares of Common Stock and other securities issuable upon such exercise shall be duly and validly issued, fully paid, non-assessable and not subject to the preemptive rights of any stockholder. As long as the Warrants shall be outstanding, the Company shall use its reasonable

efforts to cause all shares of Common Stock issuable upon the exercise of the Warrants to be listed (subject to official notice of issuance) on all securities exchanges on which the Common Stock issued to the public in connection herewith may then be listed and/or quoted.

15. Notices to Warrant Holders. Nothing contained in this Agreement shall be construed as conferring upon the Holder the right to vote or to consent or to receive notice as a stockholder in respect of any meetings of stockholders for the election of directors or any other matter, or as having any rights whatsoever as a stockholder of the Company. If, however, at any time prior to the expiration of the Warrants and their exercise, any of the following events shall occur:

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(a) the Company shall take a record of the holders of its shares of Common Stock for the purpose of entitling them to receive a dividend or distribution payable otherwise than in cash, or a cash dividend or distribution payable otherwise than out of current or retained earnings, as indicated by the accounting treatment of such dividend or distribution on the books of the Company; or

(b) the Company shall offer to all the holders of its Common Stock any additional shares of capital stock of the Company or securities convertible into or exchangeable for shares of capital stock of the Company, or any option, right or warrant to subscribe therefor; or

(c) a dissolution, liquidation or winding up of the Company (other than in connection with a consolidation or merger) or a sale of all or substantially all of its property, assets and business as an entirety shall be proposed;

then, in any one or more of said events, the Company shall give written notice of such event at least fifteen (15) days prior to the date fixed as a record date or the date of closing the transfer books for the determination of the stockholders entitled to such dividend, distribution, convertible or exchangeable securities or subscription rights, or entitled to vote on such proposed dissolution, liquidation, winding up or sale. Such notice shall specify such record date or the date of closing the transfer books, as the case may be. Failure to give such notice or any defect therein shall not affect the validity of any action taken in connection with the declaration or payment of any such dividend, or the issuance of any convertible or exchangeable securities, or subscription rights, options or warrants, or any proposed dissolution, liquidation, winding up or sale.

16. Notices. All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

(a) If to a registered holder of the Warrants, to the address of such holder as shown on the books of the Company; or

(b) If to the Company, to the address set forth in Section 5 hereof or to such other address as the Company may designate by notice to the Holder; or

(c) If to Ryan Beck, to Ryan, Beck & Co., LLC, 200 Park Avenue, New York, NY 10166, Attention Randy F. Rock.

17. Supplements and Amendments. The Company and Ryan Beck may from time to time supplement or amend this Agreement without the approval of any holder of the Warrants in order to cure any ambiguity, to correct or supplement any provision contained herein which may be defective or inconsistent with any



provisions herein, or to make any other provisions in regard to matters or questions arising hereunder which the Company and Ryan Beck may deem necessary or desirable and which the Company and Ryan Beck deem shall not adversely affect the interests of the Holders of the Warrant Agreements.

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18. Successors. All the covenants and provisions of this Agreement shall be binding upon and inure to the benefit of the Company, the Holder and their respective successors and assigns hereunder.

19. Termination. This Agreement shall terminate at the close of business on March 9, 2006.

20. Governing Law; Submission to Jurisdiction. This Agreement and each Warrant Certificate issued hereunder shall be deemed to be a contract made under the laws of the State of Delaware and for all purposes shall be construed in accordance with the laws of said State without giving effect to the rules of said State governing the conflicts of laws.

The Company and the Holder hereby agree that any action, proceeding or claim against it arising out of, or relating in any way to, this Agreement shall be brought and enforced in the federal courts located in Wilmington, Delaware, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company and the Holder hereby irrevocably waive any objection to such exclusive jurisdiction or inconvenient forum. Any such process or summons to be served upon any of the Company and the Holder (at the option of the party bringing such action, proceeding or claim) may be served by transmitting a copy thereof, by registered or certified mail, return receipt requested, postage prepaid, addressed to it at the address set forth in Section 16 hereof. Such mailing shall be deemed personal service and shall be legal and binding upon the party so served in any action, proceeding or claim. The Company and the Holder agree that the prevailing party(ies) in any such action or proceeding shall be entitled to recover from the other party(ies) all of its/their reasonable legal costs and expenses relating to such action or proceeding and/or incurred in connection with the preparation therefor.

21. Entire Agreement; Modification. This Agreement contains the entire understanding between the parties hereto with respect to the subject matter hereof and may not be modified or amended except by a writing duly signed by the party against whom enforcement of the modification or amendment is sought.

22. Severability. If any provision of this Agreement shall be held to be invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision of this Agreement.

23. Captions. The caption headings of the Sections of this Agreement are for convenience of reference only and are not intended, nor should they be construed as, a part of this Agreement and shall be given no substantive effect.

24. Benefits of this Agreement. Nothing in this Agreement shall be construed to give to any person or corporation other than the Company and the Holder any legal or equitable right, remedy or claim under this Agreement; and this Agreement shall be for the sole benefit of the Company and the Holder and any other registered holder.

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25. Counterparts. This Agreement may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original, and such counterparts shall together

constitute but one and the same instrument.

26. Assignment. This Agreement may not be assigned by the Holder without prior written consent of all parties hereto. The Warrants granted hereunder may be assigned in part, or in whole if prior to any such assignment the assignee executes and delivers to the Company a Certification, the form and content of which must be satisfactory to the Company, in which such assignee represents to the Company that such assignee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such assignee is an accredited investor, and that such assignee is acquiring such designated Warrants for the assignees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and such assignee shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the assignee.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed, as of the day and year first above written.

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

By: /s/ Louis Centofanti  
Louis Centofanti  
President and Chief Executive Officer

RYAN, BECK & CO., LLC

By: /s/ Randy Rock  
Name: Randy F. Rock  
Title: Managing Director

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.**

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON**

**EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS AND CONDITIONS, INCLUDING REGARDING PARTIAL CANCELLATION, SET FORTH IN THAT CERTAIN WARRANT AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.**

**COMMON STOCK PURCHASE WARRANT CERTIFICATE**

**Dated: March 9, 2001**

**Twenty Four Thousand Three Hundred Six (24,306) Warrants  
to purchase Twenty Four Thousand Three Hundred Six (24,306)**

**Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:30 P.M., NEW YORK TIME**

**on**

**March 9, 2006**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**, a Delaware corporation (the "Company"), hereby certifies that RYAN, BECK & CO., LLC, and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time after the date hereof, until 5:30 p.m., New York Time on March 9, 2006, up to an aggregate of Twenty Four Thousand Three Hundred Six (24,306) shares (the "Shares" or "Warrant Shares") of the Company's common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.44 per share (the "Per Share Exercise Price") subject to adjustment as provided in that certain Warrant Agreement of even date herewith between the Company and the Holder.

1. **Exercise of Warrant.** Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the Election to Purchase or Assign form duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32606-1649, together with (a) cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased or (b) Warrants to be surrendered pursuant to a cashless exercise as described in Section 5.2 of the Warrant Agreement (either, the "Aggregate Exercise Price"), the Company, or the Company's transfer agent, as the case may be, shall deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. All or less than all of the Warrants represented by this Certificate may be exercised and, in case of the exercise of less than all, the Company, upon surrender hereof, will deliver to the Warrant Holder a new Warrant Certificate or Certificates of like tenor and dated the date hereof entitling said Warrant Holder to purchase the number of Warrant Shares represented by this Certificate which have not been exercised or surrendered and to

receive the Registration Rights set forth in Section 8 below (to the extent such rights have not already been exercised) with respect to such Warrant Shares.

2. **Exchange and Transfer.** This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Certificate or Certificates of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares as the Certificate or Certificates surrendered.

3. **Rights and Obligations of Warrant Holder of this Certificate.** The Holder of this Certificate shall not, by virtue hereof, be entitled to any rights of a stockholder in the Company, either at law or in equity; provided, however, that in the event any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder shall, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Purchase form, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by his acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder of this Certificate, by accepting the same, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner for all purposes whatsoever, and the Company shall not be affected by any notice to the contrary.

4. **Issuance of Certificates.** As soon as practicable after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder

of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Per Share Exercise Price. All such certificates shall bear a restrictive legend to the effect that, subject to the provisions of Section 8 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration and qualification or an exemption thereof, such legend to be substantially in the form of the bold face language appearing on page 1 of this Warrant Certificate.

5. **Disposition of Warrants or Shares.**

a. The Holder of this Warrant Certificate, by his acceptance thereof, agrees that (i) no public distribution of Warrants or Shares will be made in violation of the provisions of the Securities Act of 1933, as amended, and the Rules and Regulations promulgated thereunder (collectively, the "Act"), and (ii) during such period as delivery of a prospectus with respect to Warrants or Shares may be required by the Act, no

public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The holder this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that prior written consent to such transfer be obtained from the Company after delivery to the Company of a Certification and agreement as defined in Section 26 of the Warrant Agreement.

b. By acceptance hereof, the Holder represents and warrants that this Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear the following legend:

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The securities represented by this certificate have not been registered under the Securities Act of 1933 and are restricted securities within the meaning thereof. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act which is effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that such sale or transfer is exempt from the registration requirements of such Act.

6. **Warrant Holder Not Shareholder**. This Warrant Certificate shall not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

7. **Registration Rights**. The Company agrees that the Warrant Shares shall have those registration rights set forth in Section 10 of the Warrant Agreement.

8. **Notices**. All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

If to the Company:

Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32606-1649

Attention: Dr. Louis F. Centofanti  
Chief Executive Officer

with copies simultaneously  
by like means to:

Conner & Winters  
One Leadership Square, Suite 1700  
211 North Robinson  
Oklahoma City, Oklahoma 73102  
Attention: Irwin H. Steinhorn, Esquire

If to the Holder:

Ryan, Beck & Co., LLC  
200 Park Avenue  
New York, New York 10166  
Attention: Randy Rock

9. **Governing Law.** This Warrant Certificate and all rights and obligations hereunder shall be deemed to be made under and governed by the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

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10. **Successors and Assigns.** This Warrant Certificate shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

11. **Headings.** The headings of various sections of this Warrant Certificate have been inserted for reference only and shall not be a part of this Agreement.

12. **Subject to Warrant Agreement.** This Warrant Certificate is subject to the terms and conditions set forth in the Warrant Agreement. In the event of a conflict between this Warrant and the Warrant Agreement, the Warrant Agreement shall control.

**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of March 9, 2001.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By: /s/ Louis Centofanti  
Richard T. Kelecyc  
Vice President and Chief Financial Officer



THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.

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PERMA-FIX ENVIRONMENTAL SERVICES, INC.

RYAN, BECK & CO., LLC

WARRANT AGREEMENT

Dated as of July 31, 2001

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WARRANT AGREEMENT, dated as of July 31, 2001 (the "Agreement"), by and between PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Company") and RYAN, BECK & CO., LLC ("Ryan Beck" or "Holder").

W I T N E S S E T H:

WHEREAS, the Company proposes to issue to the Holder, or subject to the terms hereof, those permitted designees, warrants ("Warrants") to purchase up to an aggregate 54,688 shares of common stock of the Company, par value \$.001 per share ("Common Stock");

WHEREAS, this Agreement is one of nine warrant agreements (collectively, the "Warrant Agreements") issued by the Company to Ryan Beck, Larkspur Capital Corporation ("Larkspur") and certain of their officers and/or directors, with all such Warrant Agreements dated as of July 31, 2001, allowing the holders (collectively, the "Holders of the Warrant Agreements") under all of the Warrant Agreements to purchase up to an aggregate of 273,438 shares of Common Stock (the "Total Warrant Shares"), pursuant to the terms of a letter agreement, dated January 25, 2000 (the "Letter Agreement"), among the Company, Ryan Beck and Larkspur, whereby Ryan Beck and Larkspur have agreed to provide certain financial services to the Company;

WHEREAS, the Company proposes to issue the Warrants to the Holder and enter into all of the Warrant Agreements, as a part of the retainer for the services to be provided under the Letter Agreement;

WHEREAS, the Holder is an "accredited investor," as such term is defined in Rule 501 of



Regulation D promulgated under the Securities Act of 1933, as amended (the "Act");

WHEREAS, if the Holder designates any other party as a designee for the purpose of receiving any portion of the Warrants pursuant to the terms hereof, then, prior to receiving any of the Warrants as designee of the Holder, such designee must execute and deliver to the Company a written certification ("Certification"), the form and content of which must be satisfactory to the Company, in which such designee represents to the Company that such designee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such designee is an accredited investor, and that such designee is acquiring such designated Warrants for the designees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the designee;

WHEREAS, the Common Stock is listed for trading on the Boston Stock Exchange and the National Association of Securities Dealers Automated Quotation SmallCap market ("NASDAQ"), and the Company is subject to the reporting requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and has been subject to such filing requirements for the past ninety (90) days; and

WHEREAS, in reliance upon the representations made by the Holder in this Agreement and the Holders of the Warrant Agreements in all of the other Warrant Agreements, the transactions contemplated by this Agreement and all of the Warrant Agreements, are such that the offer and purchase of securities hereunder will be exempt from registration under applicable federal securities laws because this is a private placement and intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Securities Act and/or Regulation D promulgated under the Act.

NOW, THEREFORE, in consideration of the premises, the payment by Ryan Beck and Larkspur to the Company of an aggregate of twenty seven dollars and thirty four cents (\$27.34), the agreements herein set forth and other good and valuable consideration, hereby acknowledged, the parties hereto agree as follows:

1. Grant. The Holder is hereby granted Warrants providing the right to purchase, at any time and from the date hereof until 5:30 p.m., New York time, on July 31, 2006, up to an aggregate of 54,688 shares of Common Stock (the "Warrant Shares") at an initial exercise price (subject to adjustment as provided in Section 11 hereof) of \$1.44 per share of Common Stock subject to the terms and conditions of this Agreement. Except as set forth herein, the Warrant Shares issuable upon exercise of the Warrants are in all respects identical to the shares of Common Stock that have been issued to the public. .

2. Warrant Certificate. The warrant certificates (the "Warrant Certificate") delivered and to be delivered pursuant to this Agreement shall be in the form set forth in Exhibit A, attached hereto and made a part hereof, with such appropriate insertions, omissions, substitutions, and other

variations as required or permitted by this Agreement. There shall be one Warrant Certificate issued to the Holder hereunder in the amount of 54,688 Warrants.

3. Representations, Warranties and Covenants of Holder. The Holder of Warrants and/or Warrant Shares hereby represents, warrants and covenants to the Company as follows:

3.1 Investment Intent. The Holder represents and warrants that the Warrants are being, and any underlying Warrant Shares will be, purchased or acquired solely for such Holder's own account, for investment purposes only and not with a view toward the distribution or resale to others. The Holder acknowledges and understands that neither the Warrants nor Warrant Shares have been registered under the Act by reason of a claimed exemption under the provisions of the Act which depends, in large part, upon the Holder's representations as to investment intention, investor status, and related and other matters set forth herein. The Holder understands that, in the view of the Securities and Exchange Commission (the "Commission"), among other things, a purchase with an intent to distribute or resell would represent a purchase and acquisition with an intent inconsistent with its representation to the Company, and the Commission might regard such a transfer as a deferred sale for which the registration exemption is not available.

3.2 Certain Risk. The Holder recognizes that the purchase of the Warrants or Warrant Shares involves a high degree of risk in that (a) although the Company has had an audited net income for the year ended December 31, 1999, the Company did sustain losses for the six month period ended June 30, 2001, from its operations, and may require substantial funds for its operations; (b) that the Company has a substantial accumulated deficit; (c) an investment in the Company is highly speculative and only investors who can afford the loss of their entire investment should consider investing in the Company and the Warrants or Warrant Shares; (d) an investor may not be able to liquidate his investment; (e) transferability of the Warrants or Warrant Shares is extremely limited; (f) in the event of a disposition an investor could sustain the loss of his entire investment; (g) the Warrants represent non-voting equity securities, and the right to exercise such Warrants and purchase shares of voting equity securities in a corporate entity that has an accumulated deficit; (h) no return on investment, whether through distributions, appreciation, transferability or otherwise, and no performance by, through or of the Company, has been promised, assured, represented or warranted by the Company, or by any director, officer, employee, agent or representative thereof; and, (i) while the Common Stock is

and

presently quoted and traded on the Boston Stock Exchange and the NASDAQ

while the Holder is a beneficiary of certain registration rights provided herein, the Warrants subscribed for and that are purchased under this Agreement and the Warrant Shares (a) are not registered under applicable federal or state securities laws, and thus may not be sold, conveyed, assigned or transferred unless registered under such laws or unless an exemption from registration is available under such laws, as more fully described herein, and (b) the Warrants subscribed for and that are to be purchased under this Agreement are not quoted, traded or listed for trading or quotation on the NASDAQ, or any other organized market or quotation system, and there is therefore no present public or other market for the Warrants, nor can there be any assurance that the Common Stock will continue to be quoted, traded or listed for trading or quotation on the Boston Stock Exchange or the NASDAQ or on any other organized market or quotation system.

3.3 Prior Investment Experience. The Holder acknowledges that Holder has prior investment experience, including investment in non-listed and non-registered securities, or Holder has employed the services of an investment advisor, attorney or accountant to read all of the documents furnished or made available by the Company to them and to evaluate the merits and risks of such an investment on Holder's behalf, and that Holder recognizes the highly speculative nature of this investment.

3.4 No Review by the Commission. The Holder hereby acknowledges that this offering of the Warrants has not been reviewed by the Commission because this private placement is intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Act and/or Regulation D promulgated under the Act.

3.5 Not Registered. The Holder understands that the Warrants and the Warrant Shares have not been registered under the Act by reason of a claimed exemption under the provisions of the Act which depends, in part, upon the Holder's investment intention. In this connection, the Holder understands that it is the position of the Commission that the statutory basis for such exemption would not be present if Holder's representations merely meant that Holder's intention was to hold such securities for a short period, such as the capital gains period of tax statutes, for a deferred sale, for a market rise (assuming that a market develops), or for any other fixed period.

3.6 No Public Market. The Holder understands that there is no public market for the Warrants. The Holder understands that although there is presently a public market for the Common Stock, including the Warrant Shares, Rule 144 (the "Rule")

promulgated under the Act requires, among other conditions, a one-year holding period following full payment of the consideration therefor prior to the resale (in limited amounts) of securities acquired in a nonpublic offering without having to satisfy the registration requirements under the Act. The Holder understands that the Company makes no representation or warranty regarding its fulfillment in the future of any reporting requirements under the Exchange Act, or its dissemination to the public of any current financial or other information concerning the Company, as is required by the Rule as one of the conditions of its availability. The Holder understands and hereby acknowledges that the Company is under no obligation to register the Warrants or the Warrant Shares under the Act, except as set forth in Section 10 hereof.

- 3.7 Sophisticated Investor. The Holder (a) has adequate means of providing for the Holder's current financial needs and possible contingencies and has no need

for

liquidity of the Holder's investment in the Warrants; (b) is able to bear the economic risks inherent in an investment in the Warrants and understands that an important consideration bearing on Holder's ability to bear the economic risk of the purchase of Warrants is whether the Holder can afford a complete loss of the Holder's investment in the Warrants and the Holder represents and warrants that the Holder can afford such a complete loss; and (c) has such knowledge and experience in business, financial, investment and banking matters (including, but not limited to, investments in restricted, non-listed and non-registered securities) that the Holder is capable of evaluating the merits, risks and advisability of an investment in the Warrants.

- 3.8 Tax Consequences. The Holder acknowledges that the Company has made no representation regarding the potential or actual tax consequences for the Holder which will result from entering into the Agreement. The Holder acknowledges

that

the Holder bears complete responsibility for obtaining adequate tax advice regarding the Agreement.

- 3.9 Commission Filing. The Holder acknowledges that Holder has been previously furnished with true and complete copies of the following documents which have been filed with the Commission pursuant to Sections 13(a), 14(a), 14(c) or 15(d) of the Exchange Act, and that such have been furnished to the Holder a reasonable time prior to the date hereof: (i) Annual Report on Form 10-K for the year ended December 31, 1999 (the "Form 10-K"), as may be amended; (ii) the Company's Proxy Statement delivered to shareholders on or about November 13, 2000; and (iii) the information contained in any

of the Form 10-K.

the

- 3.10 Documents, Information and Access. The Holder's decision to purchase the Warrants are not based on any promotional, marketing or sales materials, and

Holder and the Holder's representatives have been afforded, prior to purchase thereof, the opportunity to ask questions of, and to receive answers from, the Company and its management, and has had access to all documents and information which Holder deems material to an investment decision with respect to the purchase of Warrants hereunder.

- 3.11 No Commission. The Holder agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the subscription described hereunder.

- 3.12 Accredited Investor. The Holder is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act as follows:

3.12.1 Natural Person. If the Holder is a natural person, such person (i) has an individual net worth, or joint net worth with such person's spouse at the time of the purchase described hereunder, in excess of \$1,000,000 or (ii) had individual income in excess of \$200,000 in each of the two most recent years or joint income with such person's spouse in excess of \$300,000 in each of those years and has a reasonable expectation of reaching the same income level in the current year.

3.12.2 Corporation. If the Holder is a corporation, such corporation has total assets in excess of \$5,000,000 and was not formed for the specific purpose of acquiring the Warrants or the Warrant Shares.

3.12.3 Trust. If the Holder is a trust, such must be (i) a revocable or grantor trust and each person with the power to revoke the trust must qualify as an accredited investor under Section 3.12.1 or 3.12.2 above and/or (ii) a trust with total assets in excess of \$5,000,000, not formed for the specific purpose of acquiring the securities offered and whose purchase is directed by a sophisticated person as described in Section Section 3.7 hereof.

- 3.13 Reliance. The Holder understands and acknowledges that the Company is relying upon all of the representations, warranties, covenants, understandings, acknowledgments and agreements contained in this Agreement in determining

whether to accept this subscription and to sell and issue the Warrants to the Holder.

- 3.14 Accuracy or Representations and Warranties. All of the representations, warranties, understandings and acknowledgments that Holder has made herein are true and

correct in all material respects as of the date of execution hereof. The Holder will perform and comply fully in all material respects with all covenants and agreements set forth herein, and the Holder covenants and agrees that until the acceptance of this Agreement by the Company, the Holder shall inform the Company immediately in writing of any changes in any of the representations or warranties provided or contained herein.

4. Representations, Warranties and Covenants of the Company. In order to induce Holder to enter into this Agreement, the Company hereby represents, warrants and covenants to Holder as follows:

- 4.1 Organization, Authority, Qualification. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Delaware. The Company has full corporate power and authority to own and operate its properties and assets and to conduct and carry on its business as it is now being conducted and operated.
- 4.2 Authorization. The Company has full power and authority to execute and deliver this Agreement and to perform its obligations under and consummate the transactions contemplated by this Agreement. Upon the execution of this Agreement by the Company and delivery of the Warrants, this Agreement shall have been duly and validly executed and delivered by the Company and shall constitute the legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms.
- 4.3 No Commission. The Company agrees and acknowledges that no commission or other remuneration is being paid or given directly or indirectly for soliciting the issuance of the Warrants.
- 4.4 Ownership of, and Title to, Securities. The Warrant Shares, if issued, will be, duly authorized, validly issued, fully paid and nonassessable shares of the capital stock of the Company, free of personal liability. Upon consummation of the issuance of the Warrants (and upon the exercise of the Warrants, in whole or in part) pursuant to this Agreement, the Holder will own and acquire title to the Warrants (and the Warrant Shares, as the case may be) free and clear of any and all proxies, voting trusts, pledges, options, restrictions, or other legal or equitable encumbrance of any

nature whatsoever (other than the restrictions on transfer due to federal and state securities laws or as otherwise provided for in this Agreement or in the Warrants).

5. Exercise of Warrant.

5.1 Method of Exercise. Subject to the terms hereof, the Warrants initially are exercisable at an aggregate initial exercise price per share of Common Stock set forth in Section 9.1 hereof payable by certified or cashier's check in New York Clearing House funds, subject to adjustment as provided in Section 11 hereof. Upon surrender of a Warrant Certificate with the annexed Form of Election to Purchase duly executed, together with payment of the Exercise Price (as hereinafter defined) for the shares of Common Stock purchased pursuant to the terms hereof, at the Company's principal offices (presently located at 1940 NW 67<sup>th</sup> Place, Gainesville, FL 32653) the Holder shall be entitled to receive a certificate or certificates for the shares of Common Stock so purchased. The purchase rights represented by each Warrant Certificate are

exercisable at the option of the Holder thereof, in whole or in part (but not as to fractional shares of the Common Stock underlying the Warrants). Warrants may be exercised to purchase all or part of the shares of Common Stock represented thereby. In the case of the purchase of less than all the shares of Common Stock purchasable under any Warrant Certificate, the Company shall cancel said Warrant Certificate upon the surrender thereof and shall execute and deliver a new Warrant Certificate of like tenor for the balance of the shares of Common Stock purchasable thereunder.

5.2 Exercise by Surrender of Warrants. In addition to the method of payment set forth in Section 5.1 and in lieu of any cash payment required thereunder, subject to the terms hereof, the Holder of the Warrants shall have the right at any time and from time to time to exercise the Warrants held by such Holder in full or in part by surrendering a Warrant Certificate in the manner specified in Section 5.1 in exchange for the number of Warrant Shares equal to the product of (x) the number of Warrant Shares as to which the Warrants are being exercised multiplied by (y) a fraction, the numerator of which is the Market Price (as defined in Section 5.3 below) of the Warrant Shares less the Exercise Price and the denominator of which is such Market Price. Solely for the purposes of this paragraph, Market Price shall be calculated as the average of the Market Prices for each of the five trading days preceding the Notice Date.

5.3 Definition of Market Price. As used herein, the phrase "Market Price" at any date shall be deemed to be the average closing bid quotation of the Company's Common Stock (i) as reported on the NASDAQ for the last five (5) trading days, or (ii) if the Common Stock is not traded on NASDAQ, the average closing price as listed on a national securities exchange for the last five (5) trading days, or (iii) if no longer traded on NASDAQ or listed on a national securities exchange, as determined in good faith by resolution of the Board of Directors of the Company, based on the best information available to it.

6. Issuance of Certificates. Upon the exercise of the Warrants or any portion thereof, the issuance of certificates for the Warrant Shares underlying such Warrants so exercised, shall be made forthwith (and in any event within five (5) business days thereafter) without charge to the Holder exercising such Warrants,

including, without limitation, any tax which may be payable in respect of the issuance thereof, and such certificates shall be issued in the name of the Holder thereof.

The Warrants and the certificates representing the Warrant Shares shall be executed on behalf of the Company by the manual or facsimile signature of the then Chairman or Vice Chairman of the Board of Directors or President or Vice President of the Company.

7. Restriction on Transfer of Warrants or Warrant Shares. The Holder, by such Holder's acceptance hereof, covenants and agrees that the Warrants are being acquired as an investment and not with a view to the distribution thereof. The Holder, by such Holder's acceptance thereof, agrees that (i) no public distribution of Warrants or Warrant Shares will be made in violation of the provisions of the Act and the Rules and Regulations promulgated thereunder and (ii) during such period as delivery of a prospectus with respect to Warrants or Warrant Shares may be required by the Act, no public distribution of Warrants or Warrant Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The Holder and each permitted transferee thereof further agrees that if any distribution of any of the Warrants or Warrant Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, or an opinion of counsel reasonably satisfactory to the Company,

to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that any transferee thereof deliver to the Company his or its written agreement to accept and be bound by all of the terms and conditions contained in this Agreement. Any Warrant Shares issued upon exercise of the Warrants shall bear a legend to the following effect:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

These securities are also subject to the registration rights set forth in that certain Warrant Agreement executed by Perma-Fix Environmental Services, Inc. (the "Company") and Ryan, Beck & Co. LLC, dated as of July 31, 2001, a copy of which is on file at the Company's Principal Executive Office.

8. Warrant Holder Not Shareholder. Neither this Agreement nor the Warrant Certificate shall be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Agreement or the Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

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9. Exercise Price.

9.1 Initial and Adjusted Exercise Price. Except as otherwise provided in Section 11 hereof, the initial exercise price of each Warrant shall be \$1.44 per share of Common Stock. The adjusted exercise price shall be the price which shall result from time to time from any and all adjustments of the initial exercise price in accordance with the provisions of Section 11 hereof.

9.2 Exercise Price. The term "Exercise Price" herein shall mean the initial exercise price or the adjusted exercise price, depending upon the context.

10. Registration Rights.

10.1 Piggyback Registration. Subject to the terms of this Section 10, if, at any time commencing after the date hereof and expiring seven (7) years from the effective date, the Company proposes to register any of its equity securities under the Act (other than a registration statement (i) on Form S-8 or any successor form to such form or in connection with any employee or director welfare, benefit or compensation plan, (ii) on Form S-4 or any successor form to such form or in connection with any merger, consolidation, acquisition or exchange offer, (iii) in connection with a rights offering exclusively to existing holders of Common Stock, (iv) in connection with an offering solely to employees of the Company or its subsidiaries, or (v) relating to a transaction pursuant to Rule 145 of the Act), it will give written notice by registered mail, at least thirty (30) days prior to the filing of each such registration statement, to the Holder of its intention to



do so. If Holder notifies the Company within twenty (20) business days after receipt of any such notice of its desire to include any Warrant Shares held by such Holder or Warrant Shares underlying Warrants held by such Holder in such proposed registration statement, the Company shall afford any such Holder of the opportunity to have any such Warrant Shares held by such Holder or Warrant Shares underlying Warrants held by such Holder, registered under such registration statement (sometimes referred to herein as the "Piggyback Registration").

Notwithstanding the provisions of this Section 10.1, the Company shall have the right at any time after it shall have given written notice pursuant to this Section 10.1 (irrespective of whether a written request for inclusion of any such securities shall have been made) to elect not to file any such proposed registration statement, or to withdraw the same after the filing but prior to the effective date thereof.

If a Piggyback Registration is an underwritten primary registration on behalf of the Company, and the managing underwriters advise the Company in writing that in their reasonable opinion based upon market conditions the number of securities requested to be included in such registration exceeds the number that can be sold in such offering or would impair the pricing of such offering, the Company will include in such registration (i) first, the securities the Company proposes to sell, (ii) second, up to the full number of

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applicable Common Stock requested to be included in such registration by holders of Common Stock with prior or superior piggyback registration rights, (iii) third, the number of applicable Total Warrant Shares requested to be included in such registration, pro rata among the Holders of the Warrant Agreements on the basis of the number of shares requested by such Holders of the Warrant Agreements to be included and which, in the opinion of the managing underwriter, can be sold without adversely affecting the price range or probability of success of such offering, and (iv) fourth, other securities to be included in such registration.

## 10.2 Demand Registration.

(a) Subject to the terms of this Section 10, at any time after the date hereof and expiring five (5) years from the effective date, the Holders of the Warrant Agreements representing a "Majority" (as hereinafter defined) of the Total Warrant Shares (assuming the exercise of all the warrants issued under all of the Warrant Agreements) shall have the right (which right is in addition to the registration rights under Section 10.1 hereof), exercisable by written notice to the Company, to have the Company prepare and file with the Securities and Exchange Commission (the "Commission"), on one occasion only, a registration statement and such other documents, including a prospectus, as may be necessary in the opinion of both counsel for the Company and counsel for Ryan Beck, in order to comply with the provisions of the Act, so as to permit a public offering and the sale of their respective Total Warrant Shares for nine (9) consecutive months by such Holders of the Warrant Agreements notifying the Company within ten (10) days after receiving notice from the Company of such request.

(b) The Company covenants and agrees to give written notice of any registration request under this Section 10.2 by any of the Holders of the Warrant Agreements to all Holders of the Warrant Agreements within ten (10) days from the date of the receipt of any such registration request.

(c) Notwithstanding anything to the contrary contained herein, if the Company is obligated to file a registration statement covering all or a portion of the Total Warrant Shares under Section 10.2(a) but shall not have filed a registration statement for that portion (or all, as the case may be) of the Total Warrant Shares to be covered by the registration statement within the time period specified in Section 10.3 hereof pursuant to the written notice specified in Section 10.2(a) of a Majority of the Holders of the Warrant Agreements, which time period shall be extended pursuant to 10.2(d) below, the Company shall have the option, but not the obligation, upon the written notice of election of a Majority of the Holders of the Warrant Agreements to repurchase (i) any and all Warrant Shares at the higher of the Market Price per share of Common Stock on (y) the date of the notice sent pursuant to Section 10.2(a) or (z) the expiration of the period specified in Section 10.3(a) and (ii) any and all Warrants at such Market Price less the Exercise Price of such Warrants. Such repurchase shall be in immediately available funds and shall close within two (2) days after the later of (i) the expiration of the period specified in Section 10.3(a) or (ii) the delivery of the written notice of election specified in this Section 10.2(d). The Company shall have no obligation to exercise the option that may be granted pursuant to the terms of this paragraph (c) of Section 10.2 hereof.

(d) Notwithstanding anything to the contrary, the Company may delay the filing of a registration statement under this Section 10.2 and may withhold efforts to cause such registration statement to become effective if the Company determines in good faith that such registration might interfere with or affect the negotiation or completion of any material transaction or other material event that is being contemplated by the Company (whether or not a final decision has been made to undertake such material transaction at the time the right to delay is exercised). The Company may exercise such right to delay the filing or effectiveness of a registration statement two times and may delay the filing or effectiveness of such registration statement for not more than 90 days beyond the relevant period set forth in Section 10.3(a). Upon any delay by the Company pursuant to this Section 10.2(d) which lasts more than 60 days, the Majority of the Holders of the Warrant Agreements may rescind the notice given pursuant to Section 10.2(a), and the Holders of the Warrant Agreements will be deemed not to have exercised the right to effect the filing of a registration statement under Section 10.2(a) as a result of such notice.

(e) Notwithstanding anything herein to the contrary, the obligations of the Company and rights of the Holders of the Warrant Agreements under Sections 10.1, 10.2 and 10.3 of this Agreement and the other Warrant Agreements shall expire and terminate at such time as Ryan Beck, or its successors, shall have received from counsel to the Company an unqualified written opinion of such counsel that the Holders of the Warrant Agreements have the right, pursuant to the provision of Rule 144 under the Act, to sell within any three month period from the date of the opinion all of the Total Warrant Shares then held and purchasable upon exercise of the warrants issued under the Warrant Agreements by such Holders of the Warrant Agreements.

10.3 Covenants of the Company With Respect to Registration. In connection with any registration under Section 10.1 or 10.2 hereof, the Company covenants and agrees as follows:

(a) The Company shall use its reasonable efforts to file a registration statement demanded under Section 10.2(a) hereof within fifty (50) days of receipt of any demand therefor, shall use its reasonable efforts to have any registration statements declared effective at the earliest possible time, and shall furnish each of the Holders of the Warrant Agreements desiring to sell all or any portion of the Total Warrant Shares under such registration statement such number of prospectuses as shall reasonably be requested.

(b) The Company shall pay all costs (excluding fees and expenses of Holder(s)' counsel and any underwriting or selling commissions which shall be paid by the Holders of the Warrant Agreements), fees and expenses in connection with all registration statements filed pursuant to Section 10.1 and 10.2(a) hereof including, without limitation, the Company's legal and accounting fees, printing expenses, blue sky fees and expenses.

(c) The Company will take all necessary action which may be required in qualifying or registering the Warrant Shares included in a registration statement for offering and sale under the securities or blue sky laws of such states as reasonably are requested by the Holder(s), provided that the Company shall not be obligated to execute or file any general consent to service of process or to qualify as a foreign corporation to do business under the laws of any such jurisdiction.

(d) Nothing contained in this Agreement shall be construed as requiring the Holders of the Warrant Agreements to exercise their Warrants prior to the initial filing of any registration statement or the effectiveness thereof.

(e) The Company shall deliver promptly to each of the Holders of the Warrant Agreements participating in the offering requesting the correspondence and memoranda described below copies of all correspondence between the Commission and the Company, its counsel or auditors and all memoranda relating to discussions with the Commission or its staff with respect to the registration statement.

#### 10.4 Indemnification.

(a) Subject to the terms of this Section 10, the Company will indemnify and hold harmless the Holders of the Warrant Agreements participating in the offerings covered by Sections 10.1 or 10.2., its directors and officers, and each person, if any, who controls such holders within the meaning of Section 15 of the Act or Section 20(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), from and against, and will reimburse such holders and each such controlling person with respect to, any and all loss, damage, liability, cost and expense to which such holder or controlling person may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in a Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the

circumstances in which they were made not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss, damage, liability, cost or expense arises out of, or is based upon, an untrue statement or alleged untrue statement or omission or alleged omission so made in conformity with information furnished by such holders or such controlling person in writing specifically for use in the preparation thereof.

(b) Subject to the terms of this Section 10, each of the Holders of the Warrant Agreements will severally, and not jointly, indemnify and hold harmless the Company, its directors and officers, any controlling person and any underwriter from and against, and will reimburse the Company, its directors and officers, any controlling person and any underwriter with respect to, any and all loss, damage, liability, cost or expense to which the Company or any controlling person and/or any underwriter may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in such Registration Statement filed with the Commission pursuant to Section 10, any prospectus contained therein

or any amendment or supplement thereto, or arise out of, or are based upon, the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was so made in reliance upon, and in strict conformity with, written information furnished by, or on behalf of, the Holders of the Warrant Agreements specifically for use in the preparation thereof.

(c) Promptly after receipt by an indemnified party pursuant to the provisions of Section 10.4(a) or 10.4(b) of notice of the commencement of any action involving the subject matter of the foregoing indemnity provisions, such indemnified party will, if a claim thereof is to be made against the indemnifying party pursuant to the provisions of Section 10.4(a) or 10.4(b), promptly notify the indemnifying party of the commencement thereof; but the omission to so notify the indemnifying party will not relieve the indemnifying party from any liability which it may have to any indemnified party otherwise than hereunder. In case such action is brought against any indemnified party and the indemnified party notifies the indemnifying party of the commencement thereof, the indemnifying party shall have the right to participate in, and, to the extent that it may wish, assume the defense thereof; or, if there is a conflict of interest which would prevent counsel for the indemnifying party from also representing the indemnified party, (or, in the event that the indemnified party and the indemnifying party are both named as parties in the action and it is reasonably determined, in good faith, by counsel for the indemnified party and counsel for the indemnifying party that there is such a conflict) the indemnified parties have the right to select only one (1) separate counsel to participate in the defense of such action on behalf of all such indemnified parties. After notice from the indemnifying parties to such indemnified party of the indemnifying parties' election so to assume the defense thereof, the indemnifying parties will not be liable to such indemnified parties pursuant to the provisions of said Section 10.4(a) or 10.4(b) for any legal or other expense subsequently incurred by such indemnified parties in connection with the defense thereof, other than reasonable costs of investigation, unless (a) the indemnified parties shall have employed counsel in accordance with the provisions of the preceding sentence;

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(b) the indemnifying parties shall not have employed counsel satisfactory to the indemnified parties to represent the indemnified parties within a reasonable time after the notice of the commencement of the action or (c) the indemnifying party has authorized the employment of counsel for the indemnified party at the expense of the indemnifying parties.

10.5 Majority. For purposes of this Agreement, the term "Majority" in reference to the Holders of the Warrant Agreements, shall mean in excess of fifty percent (50%) of the then outstanding warrants issued under the Warrant Agreements or Total Warrant Shares that (y) are not held by the Company, an affiliate, officer, creditor, employee or agent thereof or any of their respective affiliates, members of their family, persons acting as nominees or in conjunction therewith and (z) have not been resold to the public pursuant to a registration statement filed with the Commission under the Act.

11. Adjustments to Exercise Price and Number of Securities.

11.1 Subdivision and Combination. In case the Company shall at any time subdivide or combine the outstanding shares of Common Stock, the Exercise Price shall forthwith be proportionately decreased in the case of subdivision or increased in the case of combination.

11.2 Stock Dividends and Distributions. If the Company at any time, or from time to time, while the Warrants are outstanding shall declare or pay, without consideration, any dividend on the Common Stock payable in Common Stock, then the Exercise Price shall be proportionately decreased.

11.3 Adjustment in Number of Securities. Upon each adjustment of the Exercise Price pursuant to

the provisions of this Section 11, the number of Warrant Shares issuable upon the exercise at the adjusted exercise price of each Warrant shall be adjusted to the nearest full amount by multiplying a number equal to the Exercise Price in effect immediately prior to such adjustment by the number of Warrant Shares issuable upon exercise of the Warrants immediately prior to such adjustment and dividing the product so obtained by the adjusted Exercise Price.

11.4 Definition of Common Stock. For the purpose of this Agreement, the term "Common Stock" shall mean (i) the Common Stock or (ii) the class of stock designated as Common Stock in the Articles of Incorporation of the Company as may be amended as of the date hereof, or (ii) any other class of stock resulting from successive changes or reclassifications of such Common Stock consisting solely of changes in par value, or from par value to no par value, or from no par value to par value.

11.5 Merger or Consolidation. In case of any consolidation of the Company with, or merger of the Company with, or merger of the Company into, another corporation (other than a consolidation or merger in which the Company is the surviving entity), the corporation formed by such consolidation or merger shall execute and deliver to the Holder a supplemental warrant agreement providing that the holder of each Warrant then outstanding or to be outstanding shall have the right thereafter (until the expiration of such

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Warrant) to receive, upon exercise of such Warrant, the kind and amount of shares of stock and other securities and property receivable upon such consolidation or merger, by a holder of the number of shares of Common Stock of the Company for which such warrant might have been exercised immediately prior to such consolidation, merger, sale or transfer. Such supplemental warrant agreement shall provide for adjustments which shall be identical to the adjustments provided in Section 11. The above provision of this subsection shall similarly apply to successive consolidations or mergers.

11.6 No Adjustment of Exercise Price in Certain Cases. No adjustment of the Exercise Price shall be made:

(a) Upon the issuance or sale of the Warrants or the shares of Common Stock issuable upon the exercise of the Warrants;

(b) If the amount of said adjustment shall be less than two cents (2 cents) per Warrant Share, provided, however, that in such case any adjustment that would otherwise be required then to be made shall be carried forward and shall be made at the time of and together with the next subsequent adjustment which, together with any adjustment so carried forward, shall amount to at least two cents (2 cents) per Warrant Share.

12. Exchange and Replacement of Warrant Certificates. Each Warrant Certificate is exchangeable without expense, upon the surrender thereof by the registered Holder at the principal executive office of the Company, for a new Warrant Certificate of like tenor and date representing in the aggregate the right to purchase the same number of Warrant Shares in such denominations as shall be designated by the Holder thereof at the time of such surrender.

Upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of any Warrant Certificate, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it, and reimbursement to the Company of all reasonable expense incidental thereto, and upon surrender and cancellation of the Warrants, if mutilated, the Company will make and deliver a new Warrant Certificate of like tenor, in lieu thereof.

13. Elimination of Fractional Interests. The Company shall not be required to issue certificates representing fractions of shares of Common Stock upon the exercise of the Warrants, nor shall it be required

to issue scrip or pay cash in lieu of fractional interests, it being the intent of the parties that all fractional interests shall be eliminated by rounding any fraction up to the nearest whole number of shares of Common Stock or other securities, properties or rights.

14. Reservation and Listing of Securities. The Company shall at all times reserve and keep available out of its authorized shares of Common Stock, solely for the purpose of issuance upon the exercise of the Warrants, such number of shares of Common Stock or other securities, properties or rights as shall be issuable upon the exercise thereof. The Company covenants and agrees that, upon exercise of the Warrants

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and payment of the Exercise Price therefor, all shares of Common Stock and other securities issuable upon such exercise shall be duly and validly issued, fully paid, non-assessable and not subject to the preemptive rights of any stockholder. As long as the Warrants shall be outstanding, the Company shall use its reasonable efforts to cause all shares of Common Stock issuable upon the exercise of the Warrants to be listed (subject to official notice of issuance) on all securities exchanges on which the Common Stock issued to the public in connection herewith may then be listed and/or quoted.

15. Notices to Warrant Holders. Nothing contained in this Agreement shall be construed as conferring upon the Holder the right to vote or to consent or to receive notice as a stockholder in respect of any meetings of stockholders for the election of directors or any other matter, or as having any rights whatsoever as a stockholder of the Company. If, however, at any time prior to the expiration of the Warrants and their exercise, any of the following events shall occur:

(a) the Company shall take a record of the holders of its shares of Common Stock for the purpose of entitling them to receive a dividend or distribution payable otherwise than in cash, or a cash dividend or distribution payable otherwise than out of current or retained earnings, as indicated by the accounting treatment of such dividend or distribution on the books of the Company; or

(b) the Company shall offer to all the holders of its Common Stock any additional shares of capital stock of the Company or securities convertible into or exchangeable for shares of capital stock of the Company, or any option, right or warrant to subscribe therefor; or

(c) a dissolution, liquidation or winding up of the Company (other than in connection with a consolidation or merger) or a sale of all or substantially all of its property, assets and business as an entirety shall be proposed;

then, in any one or more of said events, the Company shall give written notice of such event at least fifteen (15) days prior to the date fixed as a record date or the date of closing the transfer books for the determination of the stockholders entitled to such dividend, distribution, convertible or exchangeable securities or subscription rights, or entitled to vote on such proposed dissolution, liquidation, winding up or sale. Such notice shall specify such record date or the date of closing the transfer books, as the case may be. Failure to give such notice or any defect therein shall not affect the validity of any action taken in connection with the declaration or payment of any such dividend, or the issuance of any convertible or exchangeable securities, or subscription rights, options or warrants, or any proposed dissolution, liquidation, winding up or sale.

16. Notices. All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

(a) If to a registered holder of the Warrants, to the address of such holder as shown on the books of the Company; or

(b) If to the Company, to the address set forth in Section 5 hereof or to such other address as the Company may designate by notice to the Holder; or

(c) If to Ryan Beck, to Ryan, Beck & Co., LLC, 380 Madison Avenue, New York, NY 10017, Attention Randy F. Rock.

17. Supplements and Amendments. The Company and Ryan Beck may from time to time supplement or amend this Agreement without the approval of any holder of the Warrants in order to cure any ambiguity, to correct or supplement any provision contained herein which may be defective or inconsistent with any provisions herein, or to make any other provisions in regard to matters or questions arising hereunder which the Company and Ryan Beck may deem necessary or desirable and which the Company and Ryan Beck deem shall not adversely affect the interests of the Holders of the Warrant Agreements.

18. Successors. All the covenants and provisions of this Agreement shall be binding upon and inure to the benefit of the Company, the Holder and their respective successors and assigns hereunder.

19. Termination. This Agreement shall terminate at the close of business on July 31, 2006.

20. Governing Law; Submission to Jurisdiction. This Agreement and each Warrant Certificate issued hereunder shall be deemed to be a contract made under the laws of the State of Delaware and for all purposes shall be construed in accordance with the laws of said State without giving effect to the rules of said State governing the conflicts of laws.

The Company and the Holder hereby agree that any action, proceeding or claim against it arising out of, or relating in any way to, this Agreement shall be brought and enforced in the federal courts located in Wilmington, Delaware, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company and the Holder hereby irrevocably waive any objection to such exclusive jurisdiction or inconvenient forum. Any such process or summons to be served upon any of the Company and the Holder (at the option of the party bringing such action, proceeding or claim) may be served by transmitting a copy thereof, by registered or certified mail, return receipt requested, postage prepaid, addressed to it at the address set forth in Section 16 hereof. Such mailing shall be deemed personal service and shall be legal and binding upon the party so served in any action, proceeding or claim. The Company and the Holder agree that the prevailing party(ies) in any such action or proceeding shall be entitled to recover from the other party(ies) all of its/their reasonable legal costs and expenses relating to such action or proceeding and/or incurred in connection with the preparation therefor.

21. Entire Agreement; Modification. This Agreement contains the entire understanding between the parties hereto with respect to the subject matter hereof and may not be modified or amended except by a writing duly signed by the party against whom enforcement of the modification or amendment is sought.

22. Severability. If any provision of this Agreement shall be held to be invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision of this Agreement.

23. Captions. The caption headings of the Sections of this Agreement are for convenience of reference only and are not intended, nor should they be construed as, a part of this Agreement and shall be given no substantive effect.

24. Benefits of this Agreement. Nothing in this Agreement shall be construed to give to any person or corporation other than the Company and the Holder any legal or equitable right, remedy or claim under this Agreement; and this Agreement shall be for the sole benefit of the Company and the Holder and any other registered holder.

25. Counterparts. This Agreement may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original, and such counterparts shall together constitute but one and the same instrument.

26. Assignment. This Agreement may not be assigned by the Holder without prior written consent of all parties hereto. The Warrants granted hereunder may be assigned in part, or in whole if prior to any such assignment the assignee executes and delivers to the Company a Certification, the form and content of which must be satisfactory to the Company, in which such assignee represents to the Company that such assignee is an "accredited investor" under Rule 501 of Regulation D promulgated under the Act and how such assignee is an accredited investor, and that such assignee is acquiring such designated Warrants for the assignees' own account, for investment purposes only and not with a view toward distribution or resale and agrees to be subject to and bound by all of the other conditions and provisions of this Agreement (including, but not limited to, the representations, warranties and covenants contained in Sections 3 and 7 hereof) and such assignee shall execute and deliver to the Company an agreement in form and substance substantially the same as this Agreement except for the name and number of Warrants to be issued to the assignee.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed, as of the day and year first above written.

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

By: /s/ Louis Centofanti  
Louis Centofanti  
President and Chief Executive Officer

RYAN, BECK & CO., LLC

By: /s/ Randy Rock  
Name: Randy F. Rock  
Title: Managing Director



**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.**

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS AND CONDITIONS, INCLUDING REGARDING PARTIAL CANCELLATION, SET FORTH IN THAT CERTAIN WARRANT AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.**

**COMMON STOCK PURCHASE WARRANT CERTIFICATE**

**Dated: July 31, 2001**

**Fifty Four Thousand Six Hundred Eighty Eight (54,688) Warrants  
to purchase Fifty Four Thousand Six Hundred Eighty Eight (54,688)**

**Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:30 P.M., NEW YORK TIME**

**on**

**July 31, 2006**

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**, a Delaware corporation (the "Company"), hereby certifies that RYAN, BECK & CO., LLC, and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time after the date hereof, until 5:30 p.m., New York Time on July 31, 2006, up to an aggregate of Fifty Four Thousand Six Hundred Eighty Eight (54,688) shares (the "Shares" or "Warrant Shares") of the Company's common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.44 per share (the "Per Share Exercise Price") subject to adjustment as provided in that certain Warrant Agreement of even date herewith between the Company and the Holder.

1. **Exercise of Warrant.** Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the Election to Purchase or Assign form duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32606-1649, together with (a) cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased or (b) Warrants to be surrendered pursuant to a cashless exercise as described in Section 5.2 of the Warrant Agreement (either, the "Aggregate Exercise Price"), the Company, or the Company's transfer agent, as the case may be, shall deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. All or less than all of the Warrants represented by this Certificate may be exercised and, in case of the exercise of less than all, the Company, upon surrender hereof, will deliver to the Warrant Holder a new Warrant Certificate or Certificates of like tenor and dated the date hereof entitling said Warrant Holder to purchase the number of Warrant Shares represented by this Certificate which have not been exercised or surrendered and to receive the Registration Rights set forth in Section 8 below (to the extent such rights have not already been exercised) with respect to such Warrant Shares.

2. **Exchange and Transfer.** This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Certificate or Certificates of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares as the Certificate or Certificates surrendered.

3. **Rights and Obligations of Warrant Holder of this Certificate.** The Holder of this Certificate shall not, by virtue hereof, be entitled to any rights of a stockholder in the Company, either at law or in equity; provided, however, that in the event any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder shall, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Purchase form, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by his acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the

Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder of this Certificate, by accepting the same, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner for all purposes whatsoever, and the Company shall not be affected by any notice to the contrary.

4. **Issuance of Certificates.** As soon as practicable after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder

of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Per Share Exercise Price. All such certificates shall bear a restrictive legend to the effect that, subject to the provisions of Section 8 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration and qualification or an exemption thereof, such legend to be substantially in the form of the bold face language appearing on page 1 of this Warrant Certificate.

5. **Disposition of Warrants or Shares.**

a. The Holder of this Warrant Certificate, by his acceptance thereof, agrees that (i) no public distribution of Warrants or Shares will be made in violation of the provisions of the Securities Act of 1933, as amended, and the Rules and Regulations promulgated thereunder (collectively, the "Act"), and (ii) during such period as delivery of a prospectus with respect to Warrants or Shares may be required by the Act, no public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The holder this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them otherwise than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action shall be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it shall be a condition to the transfer of the Warrants that prior written consent to such transfer be obtained from the Company after delivery to the Company of a Certification and agreement as defined in Section 26 of the Warrant Agreement.

b. By acceptance hereof, the Holder represents and warrants that this Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant shall bear the following legend:

The securities represented by this certificate have not been registered under the Securities Act of 1933 and are restricted securities within the meaning thereof. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act which is effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that such sale or transfer is exempt from the registration requirements of such Act.

6. **Warrant Holder Not Shareholder.** This Warrant Certificate shall not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

7. **Registration Rights.** The Company agrees that the Warrant Shares shall have those registration rights set forth in Section 10 of the Warrant Agreement.

8. **Notices.** All notices, requests, consents and other communications hereunder shall be in writing and shall be deemed to have been duly made and sent when delivered, or mailed by registered or certified mail, return receipt requested:

If to the Company:	Perma-Fix Environmental Services, Inc. 1940 Northwest 67th Place Gainesville, Florida 32606-1649 Attention: Dr. Louis F. Centofanti Chief Executive Officer
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with copies simultaneously by like means to:	Conner & Winters One Leadership Square, Suite 1700 211 North Robinson Oklahoma City, Oklahoma 73102 Attention: Irwin H. Steinhorn, Esquire
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If to the Holder:	Ryan, Beck & Co., LLC 380 Madison Avenue New York, New York 10017 Attention: Randy Rock Managing Director
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9. **Governing Law.** This Warrant Certificate and all rights and obligations hereunder shall be deemed to be made under and governed by the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

10. **Successors and Assigns.** This Warrant Certificate shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

11. **Headings.** The headings of various sections of this Warrant Certificate have been inserted for reference only and shall not be a part of this Agreement.

12. **Subject to Warrant Agreement.** This Warrant Certificate is subject to the terms and conditions set forth in the Warrant Agreement. In the event of a conflict between this Warrant and the Warrant Agreement, the Warrant Agreement shall control.

**IN WITNESS WHEREOF**, the Company has caused this Warrant Certificate to be duly executed, manually or by facsimile, by one of its officers thereunto duly authorized.

Dated as of July 31, 2001.

PERMA-FIX ENVIRONMENTAL  
SERVICES, INC.

By: /s/ Louis Centofanti  
Louis Centofanti  
President and Chief Executive Officer

THIS WARRANT AGREEMENT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (A) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT AGREEMENT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (B) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.

143,000 Warrants

### WARRANT AGREEMENT

This WARRANT AGREEMENT (the "Agreement") is made effective the 31<sup>st</sup> day of July, 2001 (the "Issue Date"), between PERMA-FIX ENVIRONMENTAL SERVICES, INC. a Delaware corporation (the "Company"), and Mr. David Avital, an individual ("Registered Holder").

### WITNESSETH:

WHEREAS, in connection with a private placement (the "Offering") by the Company of a minimum of 1.5 million and a maximum of 4.4 million units ("Units"), each Unit consisting of one share of the Company's common stock, par value \$.001 per share ("Common Stock"), and one warrant to purchase one share of Common Stock (a "Warrant") as described in the Confidential Private Placement Memorandum, dated April 6, 2001, as amended by Amendment No. 1 to the Confidential Private Placement Memorandum dated June 15, 2001, the Registered Holder has purchased from the Company the same number of Units as the number of Warrants set forth above pursuant to the terms and conditions of a Subscription Agreement between the Registered Holder and the Company (the "Subscription Agreement"); and

WHEREAS, in reliance upon the representations made by the Registered Holder in (a) this Agreement, (b) the Subscription Agreement, dated the same date as this Agreement, between the Company and the Registered Holder (the "Subscription Agreement"), and (c) the Investor Questionnaire completed by the Registered Holder and delivered to the Company in connection with the Offering and the purchase of Units by the Registered Holder (the "Questionnaire"), the offer and purchase of securities under this Agreement will be exempt from registration under applicable federal securities laws because this is a private placement and intended to be a nonpublic offering pursuant to Sections 4(2) and/or 3(b) of the Securities Act of 1933, as amended (the "Act"), and/or Regulation D promulgated under the Act;

WHEREAS, the Common Stock is listed for trading on the Boston Stock Exchange and the National Association of Securities Dealers Automated Quotation SmallCap market ("NASDAQ"), and the Company is subject to the reporting requirements of Sections 13 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and has been subject to such filing requirements for the past 90 days; and

WHEREAS, this Agreement sets forth the terms and conditions of the Warrants included in the Units purchased by the Registered Holder under the Offering.

NOW THEREFORE, in consideration of the mutual promises herein contained and

intending to be legally bound, the parties hereby agree as follows:

1. Warrants. The Company hereby grants to Registered Holder Warrants for the right to purchase up to an aggregate of 143,000 shares of Common Stock (the "Warrant Shares") at an initial exercise price (subject to adjustment as provided in paragraph 14 below) of \$1.75 per share of Common Stock (the "Exercise Price"), subject to the terms and conditions of this Agreement. Except as set forth herein, the Warrant Shares issuable upon exercise of the Warrants are in all respects identical to the shares of Common Stock that have been issued to the public. The Registered Holder may exercise all or any number of Warrants resulting in the purchase of a whole number of Warrant Shares..
2. Exercise Period. The Warrants may be exercised at any time commencing after the date upon which notice is received by the Registered Holder that the shareholders of the Company have approved the exercise of the Warrants at the Exercise Price and ending at 5:00 p.m., Eastern Standard Time, on the fifth anniversary date of the Issue Date, subject to paragraph 9 of this Agreement.
3. Warrant Certificates. The warrant certificates (the "Warrant Certificates") delivered and to be delivered pursuant to this Agreement will be in the form set forth in Exhibit A, attached hereto and made a part hereof, with such appropriate insertions, omissions, substitutions, and other variations as required or permitted by this Agreement. Warrant Certificates will be manually countersigned by the Company and will not be valid for any purpose unless so countersigned.
4. Issuance of New Certificates. Notwithstanding any of the provisions of this Agreement or any Warrant Certificate to the contrary, the Company may, at its option, issue one or more new Warrant Certificates in such form as may be approved by its Board of Directors to reflect any adjustment or change in the Exercise Price or the number or kind of shares purchasable under the each Warrant Certificate made in accordance with the provisions of this Agreement.
5. Exercise of Warrant. Subject to the terms of this Agreement, the Warrants initially are exercisable at an aggregate initial exercise price per share of Common Stock set forth in paragraph 1 hereof payable by certified or cashier's check in United States dollars, subject to adjustment as provided in paragraph 14 of this Agreement. Upon surrender of a Warrant Certificate with the annexed Form of Election to Purchase duly executed, together with payment in full of the exercise price for the shares of Common Stock purchased pursuant to the terms of this Agreement, at the Company's principal offices (presently located at 1940 Northwest 67<sup>th</sup> Place, Gainesville, Florida 32653), the Registered Holder will be entitled to receive a certificate or certificates for the shares of Common Stock so purchased. The purchase rights represented by each Warrant Certificate are exercisable at the option of the Registered Holder, in whole or in part (but not as to fractional shares of the Common Stock underlying the Warrants). Warrants may be exercised to purchase all or part of the Warrant Shares. If less than all the Warrant Shares are purchased under any Warrant Certificate, the Company will cancel the Warrant Certificate

upon the surrender thereof and will execute and deliver a new Warrant Certificate of like tenor

for the balance of the Warrant Shares purchasable under the original Warrant Certificate.

6. Issuance of Certificates. Upon the exercise of all or any portion of the Warrants, the issuance of

certificates for the Warrant Shares underlying the Warrants so exercised, will be made promptly

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(and in any event within 10 business days thereafter) without charge to the Registered Holder

exercising such Warrants, including, without limitation, any tax which may be payable in respect of the issuance thereof, and such certificates will be issued in the name of the Registered Holder. The Warrants and the certificates representing the Warrant Shares will be executed on behalf of the Company by the manual or facsimile signature of the then Chairman or Vice Chairman of the Board of Directors or President or Vice President of the Company.

7. Restriction on Transfer of Warrants or Warrant Shares. The Registered Holder, by Registered

Holder's acceptance of this Agreement, covenants and agrees that the Warrants are being acquired as an investment and not with a view to the distribution thereof. The Registered Holder, by acceptance of this Agreement, agrees that (a) no public distribution of Warrants or Warrant Shares will be made in violation of the provisions of the Act and the Rules and Regulations promulgated thereunder and (b) during such period as delivery of a prospectus with respect to Warrants or Warrant Shares may be required by the Act, no public distribution of Warrants or Warrant Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The Registered Holder and each permitted transferee of the Registered Holder further agrees that if any transfer or other distribution of any of the Warrants or Warrant Shares is proposed to be made by them other than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action will be taken only after receipt by the Company of an opinion of its counsel, or an opinion of counsel reasonably satisfactory to the Company, to the effect that the proposed transfer or other distribution will not be in violation of the Act or applicable state law. As a condition to the transfer of the Warrants, any transferee of the Warrants must deliver to the Company a written agreement to accept and be bound by all of the terms and conditions contained in this Agreement. Any Warrant Shares issued upon exercise of the Warrants will bear a legend to the following effect:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification



are not required under applicable federal or state securities laws or an exemption is available therefrom.

8. Warrant Holder Not Shareholder. Neither this Agreement nor the Warrant Certificate will be deemed to confer upon the Registered Holder any right to vote the Warrant Shares or to consent to or receive notice as a shareholder of the Company as such, because of this Agreement or the Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.
9. Taxes. The Company will pay all taxes attributable to the initial issuance of Warrant Shares upon exercise of Warrants. The Company will not, however, be required to pay any tax which may be payable in respect to any transfer involved in any issue of Warrant Certificates

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or in the issue of any certificates of Warrant Shares in the name other than that of the Registered Holder upon the exercise of any Warrant, as the case may be.

10. Mutilated or Missing Certificates. If any Warrant Certificate is mutilated, lost, stolen or destroyed, the Company may, on such terms as to indemnity or otherwise as they it in its discretion impose (which will, in the case of a mutilated Warrant Certificate, include the surrender thereof), and upon receipt of evidence satisfactory to the Company of such mutilation, loss, theft or destruction, issue a substitute Warrant Certificate, respectively, of like denomination or tenor as the Warrant Certificate so mutilated, lost, stolen or destroyed. Applicants for substitute Warrant Certificates will comply with such other reasonable regulations and pay any reasonable charges as the Company may prescribe.
11. Subsequent Issue of Certificates. Subsequent to their original issuance, no Warrant Certificates will be reissued except (a) such Certificates issued upon transfer thereof in accordance with paragraph 7 hereof, (b) such Certificates issued upon any combination, split-up or exchange of Warrant Certificates pursuant to paragraph 14 hereof, (c) such Certificates issued in replacement of mutilated, destroyed, lost or stolen Warrant Certificates pursuant to paragraph 10 hereof, (d) Warrant Certificates issued upon the partial exercise of Warrant Certificates pursuant to paragraph 5 hereof, and (e) Warrant Certificates issued to reflect any adjustment or change in the Exercise Price or the number or kind of shares purchasable thereunder pursuant to paragraph 14 hereof.
12. Reservation of Shares. For the purpose of enabling the Company to satisfy all obligations to issue Warrant Shares upon exercise of Warrants, the Company will at all times reserve and keep available free from preemptive rights, out of the aggregate of its authorized but unissued shares, the full number of Shares which may be issued upon the exercise of the Warrants. The Company covenants all shares which will be so issuable upon exercise of the Warrants, will upon issue be fully paid and nonassessable by the Company and free from all taxes, liens, charges and security interests with respect to the issue thereof.

13. Registration. The Warrant Shares issuable upon exercise of the Warrants are subject to the registration rights set forth in the Subscription Agreement.
14. Adjustments of Number and Kind of Shares Purchasable and Exercise Price. The number and kind of securities or other property purchasable upon exercise of a Warrant will be subject to adjustment from time to time upon the occurrence, after the date hereof, of any of the following events.
- 14.1 Distributions; Dividends; Subdivisions; Combinations. If the Company (a) pays a dividend in, or makes a distribution of, shares of capital stock on its outstanding Common Stock; (b) subdivide its outstanding shares of Common Stock into a greater number of shares; or (c) combines its outstanding shares of Common Stock into a smaller number of shares, then the total number of shares of Common Stock purchasable upon the exercise of each Warrant outstanding immediately prior to such event will be adjusted so that the Registered Holder of any Warrant Certificate will be entitled, upon proper exercise of the Warrants, to receive at the same aggregate Exercise Price the number of shares of capital stock (of one or more classes) which the Registered Holder would have owned or have been entitled to receive immediately following the happening of any of the events described above had such Warrant been exercised in full immediately prior to the record date with respect to such event. Any

adjustment made pursuant to this paragraph 14.1 will, in the case of a stock dividend or distribution, become effective as of the applicable record date and, in the case of a subdivision or combination, be made as of the effective date of the event. If, as a result of an adjustment made pursuant to this paragraph, the Registered Holder of any Warrant Certificate becomes entitled, upon proper exercise of the Warrants, to receive shares of two or more classes of capital stock of the Company, the Board of Directors of the Company (whose determination will be conclusive and will be evidenced by a Board resolution) will determine the allocation of the adjusted Exercise Price between or among shares of such classes of capital stock.

- 14.2 Consolidation; Merger. If the Company consolidates with, or merges into, another corporation (other than a consolidation or merger which does not result in any reclassification or change of the outstanding Common Stock), or in case of any sale or conveyance to another corporation of the property of the Company as an entirety or substantially as an entirety, the corporation formed by such consolidation or merger or the corporation which will have acquired such assets, as the case may be, will execute and deliver to the Registered Holder a supplemental warrant agreement providing that the Registered Holder will, with respect to each Warrant then outstanding and held by the Registered Holder, have the right thereafter (until the expiration of such Warrant) to receive, upon exercise of such Warrant, solely the kind and amount of shares of stock and other securities and property (or cash) receivable upon such consolidation, merger, sale or transfer by a holder of the number of shares of Common Stock of the Company

for which such Warrant might have been exercised immediately prior to such consolidation, merger, sale or transfer. Such supplemental warrant agreement will provide for adjustments which will be as nearly equivalent as may be practicable to the adjustments provided in this paragraph. The provision of this paragraph will similarly apply to successive consolidations, mergers, sales or transfers.

14.3 Reorganization; Reclassification. If any capital reorganization or a reclassification of the Common Stock (except as provided in paragraphs 14.1 and 14.2 above), will be effected, then, as a condition of such reorganization or reclassification, lawful and adequate provision will be made whereby the Registered Holder, upon exercise of Warrants, will thereafter have the right to purchase and receive, upon the basis and upon the terms and conditions specified herein and in the Warrants and, in substitution for the Common Stock to which the Registered Holder would have become entitled upon exercise immediately prior to such reorganization or reclassification, the shares (of any class or classes) or other securities or property of the Company (or cash) that the Registered Holder would have been entitled to receive at the same aggregate Exercise Price upon such reorganization or reclassification if the Warrants had been exercised immediately prior to the record date with respect to such event; and in any such case, appropriate provision (as determined by the Board of Directors of the Company, whose determination will be conclusive and will be evidenced by a certified Board resolution filed with the Warrant Agent) will be made for the application of this paragraph with respect to the rights and interests thereafter of the Registered Holders (including but not limited to the allocation of the Exercise Price between or among shares of classes of capital stock), to the end that this paragraph (including the adjustments of the number of shares of Common Stock or other securities purchasable and the Exercise Price of the

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Warrants) will thereafter be reflected, as nearly as reasonably practicable, in all subsequent exercises of the Warrants for any shares or securities or other property (or cash) thereafter deliverable upon the exercise of the Warrants.

14.4 Certification of Adjustment. Whenever the number of shares of Common Stock or other securities purchasable upon exercise of a Warrant is adjusted as provided in this paragraph, the Company will provide the Registered Holder a certificate signed by the Chairman of the Board or the President or a Vice President of the Company setting forth the number and kind of securities or other property purchasable upon exercise of a Warrant, as so adjusted, stating that such adjustments in the number or kind of shares or other securities or property conform to the requirements of this paragraph, and setting forth a brief statement of the facts accounting for such adjustments.

14.5 Change of Certificate. Irrespective of any adjustments in the number or kind of shares issuable upon exercise of Warrants, Warrant Certificates theretofore or thereafter

issued may continue to express the same price and number and kind of shares as are stated in the similar Warrant Certificates initially issuable pursuant to this Agreement.

- 14.6 Certification. The Company may retain a firm of independent public accountants of recognized standing, which may be the firm regularly retained by the Company, selected by the Board of Directors of the Company or the Executive Committee of the Board, to make any computation required under this paragraph, and a certificate signed by such firm will, in the absence of fraud or gross negligence, be conclusive evidence of the correctness of any computation made under this paragraph.
- 14.7 "Common Stock". For the purpose of this paragraph, the term "Common Stock" will mean  
mean  
or  
from  
an  
(a) the Common Stock or (b) any other class of stock resulting from successive changes  
reclassifications of such Common Stock consisting solely of changes in par value, or  
par value to no par value, or from no par value to par value. If, at any time as a result of  
adjustment made pursuant to this paragraph, the Registered Holder of any Warrant thereafter surrendered for exercise will become entitled to receive any shares of capital stock of the Company other than shares of Common Stock, thereafter the number of such other shares so receivable upon exercise of any Warrant will be subject to adjustment from time to time in a manner and on terms as nearly equivalent as practicable to the provisions with respect to the Common Stock contained in this paragraph, and all other provisions of this Agreement, with respect to the Common Stock, will apply on like terms to any such other shares.
- 14.8 Reduction of Exercise Price. The Company may, from time to time and to the extent permitted by law, reduce the exercise price of the Warrants by any amount for a period of not less than 20 days. If the Company so reduces the exercise price of the Warrants, it will give not less than 15 days notice of such decrease, which notice may be in the  
form  
of a press release, and will take such other steps as may be required under applicable law in connection with any offers or sales of securities at the reduced price.
- 14.9 No Adjustment of Exercise Price in Certain Cases. No adjustment of the exercise price will be made if the amount of the adjustment is less than two cents per Warrant Share, provided, however, that in such case any adjustment that would otherwise be required

then to be made will be carried forward and will be made at the time of, and together with, the next subsequent adjustment which, together with any adjustment so carried forward, will amount to at least two cents per Warrant Share.

15. Reduction of Exercise Price Below Par Value. Before taking any action that would cause an adjustment pursuant to paragraph 14 of this Agreement reducing the portion of the exercise price required to purchase one share of capital stock below the then par value (if any) of a  
share  
of such capital stock, the Company will use its best efforts to take any corporate action

which,

in the opinion of its counsel, may be necessary in order that the Company may validly and legally issue fully paid and non-assessable shares of such capital stock.

16. No Fractional Warrants or Warrant Shares. The Company will not be required to issue fractions

of Warrants upon the reissue of Warrants or any adjustments as described in paragraph 15, or

otherwise; but the Company in lieu of issuing any such fractional interest, will adjust the fractional interest by payment to the Registered Holder an amount, in cash, equal to the current

market value of any such fraction or interest. If the total Warrants surrendered by exercise would result in the issuance of a fractional share of Common Stock, the Company will not be required to issue a fractional share, but rather the resulting fractional interest will be adjusted by

payment in an amount, in cash, equal to the current market value of such fractional interest.

17. Agreement of Registered Holder. Every Registered Holder by accepting the same consents and

agrees with the Company, and with every other holder of a Warrant Certificate, respectively, that (a) the Warrant Certificates are transferable on the registry books of the Company only upon the terms and conditions set forth in this Agreement; and (b) the Company may deem and treat the person in whose name the Warrant Certificate is registered as the absolute owner of the Warrant (notwithstanding any notation of ownership or other writing thereon made by anyone other than the Company) for all purposes whatsoever, and the Company will not be affected by any notice to the contrary.

18. Notices. Any notice or demand authorized by this Agreement to be given or made by the Registered Holder to or on the Company will be sufficiently given or made if sent by mail, first

class, certified or registered, postage prepaid, addressed as follows:

Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32653  
Attention: Dr. Louis F. Centofanti

With a copy to:

Irwin H. Steinhorn, Esq.  
Conner & Winters, A Professional Corporation  
One Leadership Square  
211 N. Robinson, Suite 1700  
Oklahoma City, Oklahoma 73102

Any distribution, notice or demand required or authorized by this Agreement to be given or made

by the Company to or on the Registered Holder will be sufficiently given or made if sent by mail, first class, certified or registered, postage prepaid, addressed to the Registered Holder at the last known addresses as it appears on the registration books for the Warrant Certificates maintained by the Company.

19. Supplements and Amendments. The Company may from time to time supplement or amend this

Agreement without the approval of the Registered Holder in order to cure any ambiguity or to correct or supplement any provision contained herein which may be defective or inconsistent with any other provision herein, or to make any other provisions in regard to matters or questions arising hereunder which the Company may deem necessary or desirable, provided

that such supplements or amendments do not substantially alter the rights and obligations of the

Registered Holders.

20. Successors. All the covenants and provisions of this Agreement by or for the benefit of the Company or the Registered Holder will bind and inure to the benefit of their respective successors and assigns hereunder.

21. Termination. This Agreement will terminate at the close of business on the Expiration Date or

such earlier date upon which all Warrants have been exercised; provided, however, that if exercise of the Warrants is suspended pursuant to the terms of this Warrant and such suspension continues past the Expiration Date, this Agreement will terminate at the close of business on the business day immediately following the expiration of such suspension.

22. Governing Law. This Agreement and each Warrant Certificate issued hereunder will be deemed to be a contract made under the laws of the State of Delaware and for all purposes will be construed in accordance with the laws of said State without giving effect to its conflicts

of law provisions. The Registered Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

23. Benefits of this Agreement. Nothing in this Agreement will be construed to give any person or corporation other than the Company and the Registered Holder any legal or equitable right, remedy or claim under this Agreement; but this Agreement will be for the sole and exclusive benefit of the Company and the Registered Holder.

24. Counterparts. This Agreement may be executed in any number of counterparts, each of such counterparts will for all purposes be deemed to be an original and all such counterparts will together constitute but one and the same instrument.

25. Integration. As of the date hereof, this Agreement contains the entire and only agreement, understanding, representation, condition, warranty or covenant between the parties hereto with

respect to the matters herein, supersedes any and all other agreements between the parties hereto

relating to such matters, and may be modified or amended only by a written agreement signed

by both parties hereto.

26. Descriptive Headings. The descriptive headings of the paragraphs of this Agreement are inserted

for convenience only and will not control or affect the meaning or construction of any of the provisions hereof.

IN WITNESS WHEREOF, the parties have executed and delivered this Agreement on the day and year first above written.

PERMA-FIX ENVIRONMENTAL SERVICES, INC., a  
Delaware corporation

By: \_\_\_\_\_  
Dr. Louis F. Centofanti  
President and Chief Executive Officer

(the "Company")

\_\_\_\_\_  
David Avital, an individual

(the "Registered Holder")

# EXHIBIT A

THIS WARRANT CERTIFICATE AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE HEREOF THIS WARRANT AGREEMENT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (A) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT CERTIFICATE OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (B) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.

THIS WARRANT CERTIFICATE AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT ARE SUBJECT TO THE TERMS AND CONDITIONS SET FORTH IN THAT CERTAIN WARRANT AGREEMENT BETWEEN THE HOLDER HEREOF AND THE COMPANY, A COPY OF WHICH IS ON FILE AT THE COMPANY'S PRINCIPAL EXECUTIVE OFFICE.

Warrant No.: PPM0102

143,000 Warrants

CERTIFICATE OF  
WARRANT TO PURCHASE COMMON STOCK

Shares of Perma-Fix Environmental Services, Inc.

Common Stock, Par Value \$.001 Per Share

VOID AFTER 5:00 P.M., EASTERN STANDARD TIME

ON

JULY 30, 2006

PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Company"), hereby certifies that David Avital and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, is entitled to purchase from the Company at any time commencing after the date upon which notice is received by the Holder that the shareholders of the Company have approved the exercise of the Warrants at the Per Share



Exercise Price (the "Notice Date") until 5:30 p.m., Eastern Standard Time on July 30, 2006, up to an aggregate of one hundred forty-three thousand (143,000) shares (the "Shares" or "Warrant Shares") of the Company's common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.75 per share (the "Per Share Exercise Price"), subject to adjustment as provided in that certain Warrant Agreement of even date herewith between the Company and the Holder.

1. Exercise of Warrant. The Warrants may be exercised at any time commencing after the Notice Date and ending on July 30, 2006, at 5:00 p.m., Eastern Standard Time, subject to paragraph 9 of the Warrant Agreement. Upon presentation and surrender of this Common Stock Purchase Warrant Certificate ("Warrant Certificate" or "this Certificate"), with the Election to Purchase or Assign form (the "Purchase Form") duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32653-1649, together with (a) cash or a cashier's or certified check payable to the

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Company in the amount of the Per Share Exercise Price multiplied by the number of Warrant Shares being purchased (the "Aggregate Exercise Price"), either the Company, or the Company's transfer agent, as the case may be, will deliver to the Warrant Holder hereof, certificates of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. All or less than all of the Warrants represented by this Certificate may be exercised and, in case of the exercise of less than all, the Company, upon surrender hereof, will deliver to the Warrant Holder a new Warrant Certificate or, Certificates of like tenor and dated the date hereof entitling said Warrant Holder to purchase the number of Warrant Shares represented by this Certificate which have not been exercised or surrendered.

2. Exchange and Transfer. This Certificate, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other certificates of like tenor registered in the name of the same Warrant Holder, for another Warrant Certificate of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares represented by the certificate(s) surrendered.

3. Rights and Obligations of Holder of this Certificate. The Holder of this Certificate will not, by virtue hereof, be entitled to any rights of a stockholder in the Company, either at law or in equity; provided, however, that if any certificate representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant Certificate, such Holder will, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Certificate, together with a duly executed Purchase Form, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms hereof, irrespective of the date of delivery of such share certificate. The rights of the Holder of this Certificate are limited to those expressed herein and the Holder of this Certificate, by acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Certificate, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant Certificate. In addition, the Warrant Holder of this Certificate, by accepting the same, agrees that the Company may deem and treat the person in whose name this Certificate is registered on the books of the Company as the absolute, true and lawful owner for all purposes whatsoever, and the Company will not be affected by any notice to the contrary.

4. Issuance of Certificates. As soon as practicable after full or partial exercise of this Warrant Certificate, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Holder of this Warrant Certificate, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder will be entitled upon such exercise. No fractional shares will be issued on exercise of this Warrant. If on any exercise of this Warrant a fraction of a share results, the Company will pay the cash value of that fractional share, calculated on the basis of the per share exercise price. All such certificates will bear a restrictive legend to the effect that, subject to the provisions of Section 7 below, the Shares represented by such certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under any state securities laws and the Shares may not be sold or transferred in the absence of such registration, qualification or an exemption thereof, such legend to be substantially in the form of the legend appearing on page 1 of this Warrant Certificate.

5. Disposition of Warrants or Warrant Shares.

5.1. Compliance with Securities Laws. The Holder of this Warrant Certificate, by acceptance

hereof, agrees that (a) no public distribution of Warrants or Shares will be made in violation of the provisions of the Act, and (b) during such period as delivery of a

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prospectus with respect to Warrants or Shares may be required by the Act, no public distribution of Warrants or Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The holder this Warrant Certificate and each transferee hereof further agrees that if any distribution of any of the Warrants or Shares is proposed to be made by them other than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action will be taken only after receipt by the Company of an opinion of its counsel, to the effect that the proposed distribution will not be in violation of the Act or of applicable state law. Furthermore, it will be a condition to the transfer of the Warrants that prior written consent to such transfer be obtained from the Company after delivery to the Company of an agreement executed by the transferee required as defined in the Warrant Agreement.

5.2. Restriction on Transfer. By acceptance hereof, the Holder represents and warrants that this

Warrant Certificate is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant Certificate will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof, and will not be sold or transferred except in accordance with the applicable provisions of the Act and the rules and regulations promulgated thereunder, and the Holder agrees that neither this Warrant Certificate nor any of the Warrant Shares may be sold or transferred except under cover of a registration statement under the Act which is effective and current with respect to such Warrant Shares or pursuant to an opinion of counsel reasonably satisfactory to the Company that registration under the Act is not required in connection with such sale or transfer. Any Warrant Shares issued upon exercise of this Warrant will bear substantially the following legend:

The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

6. Warrant Holder Not Shareholder. This Warrant Certificate will not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to, or receive notice as a shareholder of the Company as such, because of this Warrant Certificate, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

7. Registration. The Company agrees that the Warrant Shares will have those registration rights set forth in the Subscription Agreement between the Company and the Holder.

8. Notices. All notices, requests, consents, and other communications hereunder will be in writing and will be deemed to have been duly made and sent when delivered or mailed by registered or certified mail, return-receipt requested:

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If to the Company: Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32653  
Attention: Dr. Louis F. Centofanti

With a copy to: Irwin H. Steinhorn, Esq.  
Conner & Winters, A Professional Corporation  
One Leadership Square  
211 N. Robinson, Suite 1700  
Oklahoma City, Oklahoma 73102

If to the Holder: David Avital  
54 Johnson Ave  
Englewood, NJ 07632

9. Governing Law. This Warrant Certificate and all rights and obligations hereunder will be deemed to be made under, and governed by, the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

10. Successors and Assigns. This Warrant Certificate will be binding upon and will inure to the benefit of the parties hereto and their respective successors and assigns.

11. Headings. The descriptive headings of the paragraphs of this Warrant Certificate have been inserted for reference only and will not be a part of this Warrant Certificate.

12. Subject to Warrant Agreement. This Warrant Certificate is subject to the terms and

conditions set forth in the Warrant Agreement. Capitalized terms used in this Warrant Certificate have the meanings ascribed to them in the Warrant Agreement, unless the context otherwise requires. In the event of a conflict between this Warrant and the Warrant Agreement, the Warrant Agreement will control.

IN WITNESS WHEREOF, the Company has caused this Warrant Certificate to be duly executed, manually or by one of its officers thereunto duly authorized.

Dated as of July 30, 2001.

PERMA-FIX ENVIRONMENTAL SERVICES, INC., a  
Delaware corporation

By: \_\_\_\_\_

Dr. Louis F. Centofanti,  
President and Chief Executive Officer

(the "Company")

\_\_\_\_\_  
David Avital

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## FORM OF ELECTION TO PURCHASE OR ASSIGN

### **Election to Purchase**

The undersigned hereby irrevocably elects to exercise the right, represented by the foregoing Warrant Certificate, to receive \_\_\_\_\_ shares of the Common Stock. In payment of such shares, the undersigned herewith:

\_\_\_\_\_ tenders payment for such shares to the order of Perma-Fix Environmental Services, Inc. in the amount of \$ \_\_\_\_\_ in accordance with the terms of the Warrant Agreement.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

### **Assignment**

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto \_\_\_\_\_ the foregoing Warrants and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental Services, Inc.

Dated: \_\_\_\_\_

Signature

Address \_\_\_\_\_

**Partial Assignment**

FOR VALUE RECEIVED, the undersigned hereby assigns and transfers \_\_\_\_\_  
Warrants and all rights evidenced under such part of the foregoing Warrants unto  
\_\_\_\_\_ and does irrevocably constitute and appoint  
\_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental  
Services, Inc.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE HEREOF HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR QUALIFIED UNDER APPLICABLE STATE SECURITIES LAWS, AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (A) UNDER COVER OF A REGISTRATION STATEMENT UNDER SUCH ACT AND QUALIFICATION UNDER APPLICABLE STATE SECURITIES LAWS WHICH ARE EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (B) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO PERMA-FIX ENVIRONMENTAL SERVICES, INC. TO THE EFFECT THAT REGISTRATION AND QUALIFICATION ARE NOT REQUIRED UNDER APPLICABLE FEDERAL OR STATE SECURITIES LAWS.

Warrant No. PPA0101

15,750 Shares

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

WARRANT TO PURCHASE COMMON STOCK

VOID AFTER 5:00 P.M., EASTERN STANDARD TIME

ON

JULY 30, 2006

PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Company"), hereby grants to Kennerman Associates and its permissible successors and assigns (the "Warrant Holder" or "Holder"), for value received, the right to purchase from the Company at any time commencing after the date upon which notice is received by the Holder that the shareholder of the Company have approved the exercise of the Warrants at the Per Share Exercise Price (the "Notice Date") until 5:30 p.m., Eastern Standard Time on July 30, 2006, up to an aggregate of fifteen thousand seven hundred fifty (15,750) shares of the Company's common stock, par value \$.001 per share (the "Common Stock") at an exercise price equal to \$1.75 per share (the "Per Share Exercise Price"), subject to adjustment as provided below. This warrant and all warrants of like tenor which may be issued by the Company in exchange or substitution for, or upon the transfer or partial exercise of, this warrant are collectively referred to as the "Warrant." The shares of Common Stock issued upon the exercise of the Warrant are collectively referred to as the "Shares" or "Warrant Shares."

1. Background. On July 30, 2001, the Company completed a private placement (the "Offering") of a minimum of 1.5 million and a maximum of 4.4 million units ("Units"), each Unit consisting of one share of Common Stock, and one warrant to purchase one share of Common Stock as described in the Confidential Private Placement Memorandum, dated April 6, 2001, as amended by Amendment No. 1 to the Confidential Private Placement Memorandum dated June 15, 2001 (the "Offering Memorandum"). The initial Holder of the Warrant acted as a placement agent and assisted the Company in the placement of a portion of the Units. Pursuant to the terms of the Offering, the Company has granted this Warrant to the initial Holder as partial consideration for the Holder's services to the Company as placement agent.

2. Exercise of Warrant. This Warrant may be exercised at any time commencing after the Notice Date and ending on July 30, 2006, at 5:00 p.m., Eastern Standard Time (the "Expiration Date"), subject to paragraph 8 below. Upon presentation and surrender of this Warrant, with the Election to Purchase or Assign form (the "Purchase Form") duly executed and completed, at the principal office of the Company at 1940 Northwest 67th Place, Gainesville, Florida 32653-1649, together with cash or a cashier's or certified check payable to the Company in the amount of the Per Share Exercise Price, as may be adjusted as prescribed in paragraph 16 of the Agreement, multiplied by the number of Warrant Shares being purchased (the "Aggregate Exercise Price"), either the Company, or the Company's transfer agent, as the case may be, will deliver to the Warrant Holder hereof, shares of Common Stock which, in the aggregate, represent the number of Warrant Shares being purchased. All or less than all of the Warrants may be exercised and, in case of the exercise of less than all, the Company, upon surrender hereof, will deliver to the Warrant Holder a new Warrant or Warrants of like tenor and dated the date hereof entitling said Warrant Holder to purchase the number of Warrant Shares represented by this Warrant which have not been exercised or surrendered.

3. Exchange and Transfer. This Warrant, at any time prior to the exercise hereof, upon presentation and surrender to the Company, may be exchanged, alone or with other Warrants of like tenor registered in the name of the same Warrant Holder, for another Warrant of like tenor in the name of such Warrant Holder exercisable for the aggregate number of Warrant Shares represented by the Warrant(s) surrendered.

4. Rights and Obligations of Holder of this Warrant. The Holder of this Warrant will not, by virtue hereof, be entitled to any rights of a stockholder in the Company, either at law or in equity; provided, however, that if any Warrant representing shares of Common Stock or other securities is issued to the Holder hereof upon exercise of some or all of the Warrants evidenced by this Warrant, such Holder will, for all purposes, be deemed to have become the Holder of record of such Common Stock on the date on which this Warrant, together with a duly executed Purchase Form, was surrendered and payment of the Aggregate Exercise Price was made pursuant to the terms hereof, irrespective of the date of delivery of such share Warrant. The rights of the Holder of this Warrant are limited to those expressed herein and the Holder of this Warrant, by acceptance hereof, consents and agrees to be bound by, and to comply with, all of the provisions of this Warrant, including, without limitation, all of the obligations imposed upon the Warrant Holder contained in this Warrant. In addition, the Warrant Holder of this Warrant, by accepting the same, agrees that the Company may deem and treat the person in whose name this Warrant is registered on the books of the Company as the absolute, true and lawful owner for all purposes whatsoever, and the Company will not be affected by any notice to the contrary.

5. Issuance of Shares. As soon as practicable after full or partial exercise of this Warrant, the Company, at its expense, including, without limitation, any tax which may be payable in respect of the issuance thereof, will cause to be issued in the name of, and delivered to, the Holder of this Warrant, a certificate or certificates for the number of fully paid and nonassessable shares of Common Stock to which that Holder will be entitled upon such exercise. If the total Warrant Shares to be issued upon the exercise of this Warrant would result in the issuance of a fractional share of Common Stock, the Company will not be required to issue a fractional share, but rather the resulting fractional interest will be adjusted by payment in an amount, in cash, equal to the current market value of such fractional interest. The Warrant and the certificates representing the Warrant Shares will be executed on behalf of the Company by the manual or facsimile

signature of the then Chairman or Vice Chairman of the Board of Directors or President or Vice President of the Company. All such certificates for Warrant Shares will bear a restrictive legend substantially in the form of the legend set forth in paragraph 6 of this Warrant.

6. Restriction on Transfer of Warrants or Warrant Shares. By acceptance of this Agreement, the Holder represents and warrants that this Warrant is being acquired, and all Warrant Shares to be purchased upon the exercise of this Warrant will be acquired, by the Holder solely for the account of the Holder and not with a view to the fractionalization and distribution thereof. The Holder, by acceptance of this Warrant, agrees that (a) no public distribution of Warrants or Warrant Shares will be made in violation of the provisions of the Act and the Rules and Regulations promulgated thereunder and (b) during such period as delivery of a prospectus with respect to Warrants or Warrant Shares may be required by the Act, no public distribution of Warrants or Warrant Shares will be made in a manner or on terms different from those set forth in, or without delivery of, a prospectus then meeting the requirements of Section 10 of the Act and in compliance with all applicable state securities laws. The Holder and each permitted transferee of the Holder further agrees that if any transfer or other distribution of any of the Warrants or Warrant Shares is proposed to be made by them other than by delivery of a prospectus meeting the requirements of Section 10 of the Act, such action will be taken only after receipt by the Company of an opinion of its counsel, or an opinion of counsel reasonably satisfactory to the Company, to the effect that the proposed transfer or other distribution will not be in violation of the Act or applicable state law. As a condition to the transfer of the Warrants, any transferee of the Warrants must deliver to the Company a written agreement to accept and be bound by all of the terms and conditions contained in this Warrant. Any Warrant Shares issued upon exercise of this Warrant will bear substantially the following legend:

These securities have not been registered under the Securities Act of 1933, as amended (the "Act"), or qualified under applicable state securities laws, and are restricted securities within the meaning of the Act. Such securities may not be sold or transferred, except pursuant to a registration statement under such Act and qualification under applicable state securities laws which are effective and current with respect to such securities or pursuant to an opinion of counsel reasonably satisfactory to the issuer of such securities that registration and qualification are not required under applicable federal or state securities laws or an exemption is available therefrom.

7. Warrant Holder Not Shareholder. This Warrant will not be deemed to confer upon the Holder any right to vote the Warrant Shares or to consent to, or receive notice as a shareholder of the Company as such, because of this Warrant, in respect of any matters whatsoever, or any other rights or liabilities as a shareholder.

8. Taxes. The Company will pay all taxes attributable to the initial issuance of Warrant Shares upon exercise of this Warrant. The Company will not, however, be required to pay any tax which may be payable in respect to any transfer involved in any issue of Warrants or in the issue of any Warrants of Warrant Shares in the name other than that of the Holder upon the exercise of any Warrant, as the case may be.

9. Mutilated or Missing Warrants. If any Warrant is mutilated, lost, stolen or destroyed, the



Company may, on such terms as to indemnity or otherwise as they it in its discretion impose (which will, in the case of a mutilated Warrant, include the surrender thereof), and upon receipt of evidence satisfactory to the Company of such mutilation, loss, theft or destruction, issue a substitute Warrant, respectively, of like denomination or

tenor as the Warrant so mutilated, lost, stolen or destroyed. Applicants for substitute Warrants will comply with such other reasonable regulations and pay any reasonable charges as the Company may prescribe.

10. Subsequent Issue of Warrants. Subsequent to their original issuance, no Warrants will be reissued except (a) such Warrants issued upon transfer thereof in accordance with paragraph 6 hereof, (b) such Warrants issued upon any combination, split-up or exchange of Warrants pursuant to paragraph 13 hereof, (c) such Warrants issued in replacement of mutilated, destroyed, lost or stolen Warrants pursuant to paragraph 9 hereof, (d) Warrants issued upon the partial exercise of Warrants pursuant to paragraph 2 hereof, and (e) Warrants issued to reflect any adjustment or change in the Exercise Price or the number or kind of shares purchasable thereunder pursuant to paragraph 13 hereof.

11. Reservation of Shares. For the purpose of enabling the Company to satisfy all obligations to issue Warrant Shares upon exercise of this Warrant, the Company will at all times reserve and keep available free from preemptive rights, out of the aggregate of its authorized but unissued shares, the full number of Shares which may be issued upon the exercise of this Warrant. The Company covenants all shares which will be so issuable upon exercise of this Warrant, will upon issue be fully paid and nonassessable by the Company and free from all taxes, liens, charges and security interests with respect to the issue thereof.

12. Registration Rights.

12.1 Registration. The Company hereby agrees to use reasonable efforts to file a Form S-3 Registration Statement or such other suitable registration statement acceptable to the Company (the "Registration Statement") with the Securities and Exchange Commission

("SEC") within 150 days following the completion of the Offering to register the Common Stock issuable upon exercise of this Warrant (the "Registrable Securities") under the Act, and the Company will use reasonable efforts to cause such registration to become effective within 90 days following the filing of the Registration Statement with the SEC and to remain effective for six months after the effective date of the Registration Statement; provided that the Company will not file any such Registration Statement within 60 days following the last Closing. The Company will in connection therewith use reasonable efforts to also register and qualify the Registrable Securities under the Blue Sky laws of such jurisdictions as the Company reasonably determines are necessary. The obligation of the Company under this paragraph 12.1 will be limited to one registration statement. The Company will pay the expenses described in paragraph 12.2 for the Registration Statement filed pursuant to this paragraph 12.1, except for underwriting discounts and commissions and legal fees of the Holder, which shall be borne by such Holder.

12.2 Registration Procedures. To effect the registration of Registrable Securities under the Act

pursuant to the provisions of paragraph 12.1 of this Agreement, the Company will:

12.2.1. Prepare and file with the SEC the Registration Statement with respect to the Registrable Securities within 150 days following the completion of the Offering, and use reasonable efforts to cause such registration statement to become effective within 90 days following its filing (but not less than 60 days after the completion of the Offering) and cause the same to remain effective for six months following its effective date;

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12.2.2. Prepare and file with the SEC such amendments to the Registration Statement and supplements to the prospectus contained therein and post-effective amendments thereto as may be necessary to keep the Registration Statement effective for a period of six months;

12.2.3. Furnish to the Holder participating in such registration such reasonable number of copies of the Registration Statement, preliminary prospectus, final prospectus and such other documents as may reasonably be requested by such Holder;

12.2.4. Use reasonable efforts to register or qualify the securities covered by the Registration Statement under such state securities or Blue Sky laws of such jurisdictions as the Company may reasonably determine as necessary within 30 days following the original filing of the Registration Statement, except that the Company will not for any purpose be required to execute a general consent as to service of process or to qualify to do business as a foreign corporation in any jurisdiction wherein it is not so qualified to do business; provided that the Company will execute a Form U-2 Consent to Service of Process where required by the Blue Sky laws of a particular state;

12.2.5 Notify the Holder promptly when the Registration Statement has become effective or when supplements thereto are filed;

12.2.6. Notify the Holder promptly of any material requests by the SEC related to the Registration Statement's effectiveness;

12.2.7. Prepare and file with the SEC, promptly upon the request of any Holder, any amendments or supplements to such Registration Statement or prospectus

which,

in the opinion of counsel for such Holder (and concurred in by counsel for the Company), is required under the Act or the rules and regulations thereunder in connection with the distribution of Common Stock by such Holder; and

12.2.8. Advise such Holder, promptly after it will receive notice or obtain knowledge thereof, of the issuance of any stop order by the SEC suspending the

effectiveness

of such Registration Statement or the initiation or threatening of any proceeding

for

that purpose and promptly use its reasonable efforts to prevent the issuance of

any stop order or to obtain its withdrawal if such stop order should be issued.

### 12.3 Expenses.

12.3.1. With respect to the registration pursuant to paragraph 12.1 hereof, all fees, costs and expenses of and incidental to such registration and public offering (as specified in paragraph 12.3.2 below) in connection therewith will be borne by the Company, provided, however, that any Holder participating in such registration will bear their pro rata share of the underwriting discount and commissions, if any, and transfer taxes.

12.3.2. The fees, costs and expenses of registration to be borne by the Company as provided in paragraph 12.3.1 are the following: all registration, filing, and NASD fees, printing expenses, fees and disbursements of counsel and accountants for

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the Company, and all legal fees and disbursements and other expenses of complying with state securities or Blue Sky laws of any jurisdictions in which the securities to be offered are to be registered or qualified (except as provided in 12.3.1 above). Fees and disbursements of counsel and accountants for the selling Holder and any other expenses incurred by the selling Holder not expressly included above will be borne by the selling Holder.

### 12.4. Indemnification.

12.4.1. The Company will indemnify and hold harmless each Holder of Registrable Securities which are included in the Registration Statement pursuant to the provisions of paragraph 12.1 hereof, its directors and officers, and any underwriter (as defined in the Act) for such Holder and each person, if any, who controls such Holder or such underwriter within the meaning of the Act, from and against, and will reimburse such Holder and each such underwriter and controlling person with respect to, any and all loss, damage, liability, cost and expense to which such Holder or any such underwriter or controlling person may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in such Registration Statement, any prospectus contained therein or any amendment or supplement thereto, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss,

damage, liability, cost or expenses arises out of or is based upon an untrue statement or alleged untrue statement or omission or alleged omission so made in conformity with information furnished by such Holder, such underwriter or such controlling person in writing specifically for use in the preparation thereof.

- 12.4.2. Each Holder of Registrable Securities included in a registration pursuant to the provisions of paragraph 12.1 hereof will indemnify and hold harmless the Company, its directors and officers, any controlling person and any underwriter from and against, and will reimburse the Company, its directors and officers, any controlling person and any underwriter with respect to, any and all loss, damage, liability, cost or expense to which the Company or any controlling person and/or any underwriter may become subject under the Act or otherwise, insofar as such losses, damages, liabilities, costs or expenses are caused by any untrue statement or alleged untrue statement of any material fact contained in such Registration Statement, any prospectus contained therein or any amendment or supplement thereto, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue

statement or omission or alleged omission was so made in reliance upon and in strict conformity with written information furnished by or on behalf of such Holder specifically for use in the preparation thereof.

- 12.4.3. Promptly after receipt by an indemnified party of notice of the commencement of any action involving the subject matter of the foregoing indemnity provisions, such indemnified party will, if a claim thereof is to be made against the indemnifying party pursuant to the provisions of said paragraph 12.4.1 or 12.4.2, as the case may be, promptly notify the indemnifying party of the commencement thereof; but the omission to so notify the indemnifying party will not relieve it from any liability which it may have to any indemnified party otherwise than hereunder. In case such action is brought against any indemnified party and it notifies the indemnifying party of the commencement thereof, the indemnifying party will have the right to participate in, and, to the extent that it may wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof; or, if there is a conflict of interest which would prevent counsel for the indemnifying party from also representing the indemnified party, the indemnified parties, as a whole, have the right to select one separate counsel to participate in the defense of such action on behalf of such indemnified parties. After notice from the indemnifying parties to such indemnified party of their election so to assume the defense thereof, the indemnifying parties will not be liable to such indemnified parties pursuant to the provisions of said paragraph 12.4.1 or 12.4.2 for any legal or other expense subsequently incurred by such indemnified parties in connection with the defense thereof other than reasonable costs of investigation, unless (a) the indemnified parties will have employed counsel in accordance with the provisions of the preceding sentence, (b) the indemnifying

parties will not have employed counsel to represent the indemnified parties within a reasonable time after the notice of the commencement of the action or (c) the indemnifying party has authorized, in writing, the employment of counsel for the indemnified party at the expense of the indemnifying parties.

- 12.5. Form S-3. The Company represents and Warrants that the Company is, as of the effective date of this Agreement, eligible to use Form S-3 to register its securities for sale in a secondary offering of the Company's securities for the account of selling shareholders; provided any shareholder offering the Company's securities under a Form S-3 registration statement must satisfy applicable prospectus delivery requirements and other requirements of the Act.

13. Adjustments of Number and Kind of Shares Purchasable and Exercise Price. The number and kind of securities or other property purchasable upon exercise of a Warrant will be subject to adjustment from time to time upon the occurrence, after the date hereof, of any of the following events.

- 13.1 Distributions; Dividends; Subdivisions; Combinations. If the Company (a) pays a dividend in, or makes a distribution of, shares of capital stock on its outstanding Common Stock; (b) subdivide its outstanding shares of Common Stock into a greater number of shares; or (c) combines its outstanding shares of Common Stock into a

such

number

smaller number of shares, then the total number of shares of Common Stock purchasable upon the exercise of each Warrant outstanding immediately prior to

event will be adjusted so that the Holder of any Warrant will be entitled, upon proper exercise of the Warrants, to receive at the same aggregate Exercise Price the

of shares of capital stock (of one or more classes) which the Holder would have owned or have been entitled to receive immediately following the happening of any of the events described above had such Warrant been exercised in full immediately prior to the record date with respect to such event. Any adjustment made pursuant to this paragraph 12.1 will, in the case of a stock dividend or distribution, become effective as of the applicable record date and, in the case of a subdivision or combination, be made as of the effective date of the event. If, as a result of an adjustment made pursuant to this paragraph, the Holder of any Warrant becomes entitled, upon proper exercise of the Warrants, to receive shares of two or more classes of capital stock of the Company, the Board of Directors of the Company (whose determination will be conclusive and will be evidenced by a Board resolution) will determine the allocation of the adjusted Exercise Price between or among shares of such classes of capital stock.

- 13.2. Consolidation; Merger. If the Company consolidates with, or merges into, another corporation (other than a consolidation or merger which does not result in any

or

reclassification or change of the outstanding Common Stock), or in case of any sale

conveyance to another corporation of the property of the Company as an entirety or substantially as an entirety, the corporation formed by such consolidation or merger or the corporation which will have acquired such assets, as the case may be, will execute and deliver to the Holder a supplemental warrant agreement providing that the Holder will, with respect to each Warrant then outstanding and held by the Holder, have the right thereafter (until the expiration of such Warrant) to receive, upon exercise of such Warrant, solely the kind and amount of shares of stock and other securities and property (or cash) receivable upon such consolidation, merger, sale or transfer by a holder of the number of shares of Common Stock of the Company for which such Warrant might have been exercised immediately prior to such consolidation, merger, sale or transfer. Such supplemental warrant agreement will provide for adjustments which will be as nearly equivalent as may be practicable to the adjustments provided in this paragraph. The provision of this paragraph will similarly apply to successive consolidations, mergers, sales or transfers.

- 13.3. Reorganization; Reclassification. If any capital reorganization or a reclassification of the Common Stock (except as provided in paragraphs 12.1 and 12.2 above), will be effected, then, as a condition of such reorganization or reclassification, lawful and adequate provision will be made whereby the Holder, upon exercise of Warrants, will thereafter have the right to purchase and receive, upon the basis and upon the terms and conditions specified herein and in the Warrants and, in substitution for the Common Stock to which the Holder would have become entitled upon exercise immediately prior to such reorganization or reclassification, the shares (of any class or classes) or other securities or property of the Company (or cash) that the Holder would have been entitled to receive at the same aggregate Exercise Price upon such reorganization or reclassification if the Warrants had been exercised immediately prior to the record date with respect to such event; and in any such case,

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appropriate provision (as determined by the Board of Directors of the Company, whose determination will be conclusive and will be evidenced by a certified Board resolution filed with the Warrant Agent) will be made for the application of this paragraph with respect to the rights and interests thereafter of the Holder (including but not limited to the allocation of the Exercise Price between or among shares of classes of capital stock), to the end that this paragraph (including the

adjustments

of the number of shares of Common Stock or other securities purchasable and the Exercise Price of the Warrants) will thereafter be reflected, as nearly as reasonably practicable, in all subsequent exercises of the Warrants for any shares or securities or other property (or cash) thereafter deliverable upon the exercise of the Warrants.

- 13.4. Certification of Adjustment. Whenever the number of shares of Common Stock or other securities purchasable upon exercise of a Warrant is adjusted as provided in this paragraph, the Company will provide the Holder a Warrant signed by the Chairman of the Board or the President or a Vice President of the Company setting forth the number and kind of securities or other property purchasable upon exercise

of a Warrant, as so adjusted, stating that such adjustments in the number or kind of shares or other securities or property conform to the requirements of this paragraph, and setting forth a brief statement of the facts accounting for such adjustments.

13.5. Change of Warrant. Irrespective of any adjustments in the number or kind of shares issuable upon exercise of this Warrant, the Warrants theretofore or thereafter issued may continue to express the same price and number and kind of shares as are stated in the similar Warrants initially issuable pursuant to this Warrant.

13.6. Certification. The Company may retain a firm of independent public accountants of recognized standing, which may be the firm regularly retained by the Company, selected by the Board of Directors of the Company or the Executive Committee of the Board, to make any computation required under this paragraph, and a Warrant signed by such firm will, in the absence of fraud or gross negligence, be conclusive evidence of the correctness of any computation made under this paragraph.

13.7. "Common Stock". For the purpose of this paragraph, the term "Common Stock" will mean (a) the Common Stock or (b) any other class of stock resulting from successive changes or reclassifications of such Common Stock consisting solely of changes in par value, or from par value to no par value, or from no par value to par value. If, at any time as a result of an adjustment made pursuant to this paragraph, the Holder of any Warrant thereafter surrendered for exercise will become entitled to receive any shares of capital stock of the Company other than shares of Common Stock, thereafter the number of such other shares so receivable upon exercise of any Warrant will be subject to adjustment from time to time in a manner and on terms as nearly equivalent as practicable to the provisions with respect to the Common Stock contained in this paragraph, and all other provisions of this Warrant, with respect to the Common Stock, will apply on like terms to any such other shares.

13.8. Reduction of Exercise Price. The Company may, from time to time and to the extent permitted by law, reduce the exercise price of the Warrant by any amount for a period

Warrant, of not less than 20 days. If the Company so reduces the exercise price of the Warrant, it will give not less than 15 days notice of such decrease, which notice may be in the form of a press release, and will take such other steps as may be required under applicable law in connection with any offers or sales of securities at the reduced price.

13.9. No Adjustment of Exercise Price in Certain Cases. No adjustment of the exercise price will be made if the amount of the adjustment is less than two cents per Warrant Share, provided, however, that in such case any adjustment that would otherwise be required then to be made will be carried forward and will be made at the time of, and together with, the next subsequent adjustment which, together with any adjustment so carried forward, will amount to at least two cents per Warrant Share.

14. Reduction of Exercise Price Below Par Value. Before taking any action that would cause an adjustment pursuant to paragraph 10 of this Warrant reducing the portion of the exercise price required to purchase one share of capital stock below the then par value (if any) of a share of such capital stock, the Company will use its best efforts to take any corporate action which, in the opinion of its counsel, may be necessary in order that the Company may validly and legally issue fully paid and nonassessable shares of such capital stock.

15. No Fractional Warrants. The Company will not be required to issue fractions of Warrants upon the reissue of Warrants or any adjustments as described in paragraph 14, or otherwise; but the Company in lieu of issuing any such fractional interest, will adjust the fractional interest by payment to the Registered Holder an amount, in cash, equal to the current market value of any such fraction or interest.

16. Agreement of Holder. Every Holder by accepting the same consents and agrees with the Company, and with every other holder of a Warrant, respectively, that (a) the Warrant is transferable on the registry books of the Company only upon the terms and conditions set forth in this Warrant; and (b) the Company may deem and treat the person in whose name the Warrant is registered as the absolute owner of the Warrant (notwithstanding any notation of ownership or other writing thereon made by anyone other than the Company) for all purposes whatsoever, and the Company will not be affected by any notice to the contrary.

17. Holder's Representations and Warranties. The Holder hereby acknowledges, represents and warrants to, and agrees with, the Company and its affiliates as follows:

17.1. Investment Intent. The Holder is acquiring the Warrant, and will acquire the Warrant Shares, for the Holder's own account as principal, and not as nominee or agent, for investment purposes only, and not with a view to, or for, resale, distribution or fractionalization thereof, in whole or in part, and no other person has a direct or indirect beneficial interest in the Warrant or the Warrant Shares. Further, the Holder does not have any contract, undertaking, agreement or arrangement with any person to sell, transfer or grant participation to such person or to any third person, with respect to this Warrant or the Warrant Shares.

17.2. Authority. The Holder has full power and authority to enter into this Agreement, the execution and delivery of this Agreement has been duly authorized, if applicable, and this Agreement constitutes a valid and legally binding obligation of the undersigned.

17.3. Investment Representations. The Holder acknowledges the Holder's understanding that the issuance of the Warrant and the Warrant Shares is intended to be exempt



from registration under the Act by virtue of Section 4(2) and/or the provisions of Regulation D promulgated thereunder. In furtherance thereof, the Holder represents and warrants to, and agrees with, the Company and its affiliates as follows:

(a) The Holder realizes that the basis for the exemption may not be present if, notwithstanding such representations, the Holder has in mind merely acquiring this Warrant or the Warrant Shares for a fixed or determinable period in the future. The Holder does not have any such intention.

(b) The Holder has the financial ability to bear the economic risk of the Holder's investment, has adequate means for providing for current needs and personal contingencies and has no need for liquidity with respect to an investment in the Company.

(c) The Holder has such knowledge and experience in financial and business matters as to be capable of evaluating the merits and risks of the investment in the Warrants and the Warrant Shares. If other than an individual, the Holder also represents it has not been organized as a trust for the purpose of acquiring the Warrants or the Warrant Shares.

18. Notices. All notices, requests, consents, and other communications hereunder will be in writing and will be deemed to have been duly made and sent when delivered or mailed by registered or certified mail, return-receipt requested:

If to the Company: Perma-Fix Environmental Services, Inc.  
1940 Northwest 67th Place  
Gainesville, Florida 32653  
Attention: Dr. Louis F. Centofanti

With a copy to: Irwin H. Steinhorn, Esq.  
Conner & Winters, A Professional Corporation  
One Leadership Square  
211 N. Robinson, Suite 1700  
Oklahoma City, Oklahoma 73102

If to the Holder: Kennerman Associates  
480 Broadway, Suite 310  
Saratoga Springs, NY 12866  
Attention: Christopher Grosso

21. Governing Law. This Warrant and all rights and obligations hereunder will be deemed to be made under, and governed by, the laws of the State of Delaware without giving effect to such State's conflict of laws provisions. The Holder hereby irrevocably consents to the venue and jurisdiction of the federal courts located in Wilmington, Delaware.

22. Successors and Assigns. This Warrant will be binding upon and will inure to the benefit of the parties hereto and their respective successors and assigns.

23. Headings. The descriptive headings of the paragraphs of this Warrant have been inserted for reference only and will not be a part of this Warrant.

24. Supplements and Amendments. The Company may from time to time supplement or amend this Agreement without the approval of the Holder in order to cure any ambiguity or to correct or supplement any provision contained herein which may be defective or inconsistent with any other provision herein, or to make any other provisions in regard to matters or questions arising hereunder which the Company may deem necessary or desirable, provided that such supplements or amendments do not substantially alter the rights and obligations of the Holder.

25. Termination. This Agreement will terminate at the close of business on the Expiration Date or such earlier date upon which this Warrant has been exercised in its entirety; provided, however, that if exercise of the Warrants is suspended pursuant to the terms of this Warrant and such suspension continues past the Expiration Date, this Agreement will terminate at the close of business on the business day immediately following the expiration of such suspension.

26. Benefits of this Agreement. Nothing in this Agreement will be construed to give any person or corporation other than the Company and the Holder any legal or equitable right, remedy or claim under this Agreement; but this Agreement will be for the sole and exclusive benefit of the Company and the Holder.

27. Counterparts. This Agreement may be executed in any number of counterparts, each of such counterparts will for all purposes be deemed to be an original and all such counterparts will together constitute but one and the same instrument.

28. Integration. As of the date hereof, this Agreement contains the entire and only agreement, understanding, representation, condition, warranty or covenant between the parties hereto with respect to the matters herein, supersedes any and all other agreements between the parties hereto relating to such matters, and may be modified or amended only by a written agreement signed by both parties hereto.

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed, manually or by one of its officers thereunto duly authorized.

Dated as of July 30, 2001.

PERMA-FIX ENVIRONMENTAL SERVICES, INC., a  
Delaware corporation

By: \_\_\_\_\_  
Dr. Louis F. Centofanti,  
President and Chief Executive Officer

(the "Company")

Kennerman Associates, a Pennsylvania Partnership

By: \_\_\_\_\_  
Christopher Grosso, \_\_\_\_\_

(the "Holder")

## FORM OF ELECTION TO PURCHASE OR ASSIGN

**Election to Purchase**

The undersigned hereby irrevocably elects to exercise the right, represented by the foregoing Warrant, to receive \_\_\_\_\_ shares of the Common Stock. In payment of such shares, the undersigned herewith:

\_\_\_\_\_ tenders payment for such shares to the order of Perma-Fix Environmental Services, Inc. in the amount of \$\_\_\_\_\_ in accordance with the terms of the Warrant Agreement.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

**Assignment**

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto \_\_\_\_\_ the foregoing Warrants and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental Services, Inc.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

**Partial Assignment**

FOR VALUE RECEIVED, the undersigned hereby assigns and transfers \_\_\_\_\_ Warrants and all rights evidenced under such part of the foregoing Warrants unto \_\_\_\_\_ and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer said Warrants on the books of Perma-Fix Environmental Services, Inc.

Dated: \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

**THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THIS WARRANT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), AND MAY NOT BE SOLD OR TRANSFERRED EXCEPT (i) UNDER COVER OF A REGISTRATION STATEMENT UNDER THE ACT WHICH IS EFFECTIVE AND CURRENT WITH RESPECT TO THIS WARRANT OR SUCH SHARES OF COMMON STOCK, AS THE CASE MAY BE, OR (ii) PURSUANT TO THE WRITTEN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO THE COMPANY TO THE EFFECT THAT REGISTRATION UNDER SUCH ACT IS NOT REQUIRED WITH RESPECT TO SUCH SALE OR TRANSFER.**

## **PERMA-FIX ENVIRONMENTAL SERVICES, INC.**

### **Common Stock Purchase Warrant Certificate**

**No. 07-31-01A**

**Dated: July 31, 2001**

**Seven Hundred Twelve Thousand Seventy-Three (712,073) Warrants**

**to Purchase Seven Hundred Twelve Thousand Seventy-Three (712,073)**

**Shares of Perma-Fix Environmental Services, Inc.**

**Common Stock, \$.001 Par Value Per Share**

**VOID AFTER 5:00 P.M., UNITED STATES EASTERN STANDARD TIME**

**on**

**July 31, 2008**

PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Company"), for value received, hereby certifies that Associated Mezzanine Investors-PESI, L.P., a Delaware limited partnership or registered assigns, is entitled to purchase from the Company seven hundred twelve thousand seventy-three (712,073) duly authorized, validly issued, fully paid and nonassessable shares of Common Stock, par value \$.001 per share, of the Company (the "Common Stock") at the purchase price per share of \$1.50, at any time or from time to time on or after July 31, 2001 and prior to 3 P.M., New York City time, on July 31, 2008, all subject to the terms, conditions and adjustments set forth below in this Warrant.

This Warrant is one of the Common Stock Purchase Warrants (the "Warrants", such term to include all Warrants issued in substitution therefor) originally issued in connection with the issue and sale by the Company of \$5,625,000 aggregate principal amount of its 13.50% Notes due 2006 (together with all notes issued in substitution therefor, the "Notes"), pursuant to the Note and Warrant Purchase Agreement (the

"Purchase Agreement"), dated as of July 31, 2001, between the Company and the institutional investors named therein. The Warrants originally so issued evidence rights to purchase an aggregate of 1,281,731

shares of Common Stock, subject to adjustment as provided herein. Certain capitalized terms used in this Warrant are defined in section 14.

## 1. Exercise of Warrant

1.1. Manner of Exercise. This Warrant may be exercised by the holder hereof, in whole or in part, during normal business hours on any Business Day by surrender of this Warrant, with the form of subscription at the end hereof (or a reasonable facsimile thereof) duly executed by such holder, to the Company at its principal office (or, if such exercise shall be in connection with an underwritten Public Offering of shares of Common Stock (or Other Securities) subject to this Warrant, at the location at which the Company shall have agreed to deliver the shares of Common Stock (or Other Securities) subject to such offering), accompanied by payment, in cash or by certified or official bank check payable to the order of the Company or by the application of Notes in the manner provided in section 1.5 or by surrender of Warrants in the manner provided in section 1.6 (or by any combination of such methods), in the amount obtained by multiplying (a) the number of shares of Common Stock (without giving effect to any adjustment therein) designated in such form of subscription by (b) \$1.50 and such holder shall thereupon be entitled to receive the number of duly authorized, validly issued, fully paid and nonassessable shares of Common Stock (or Other Securities) determined as provided in sections 2 through 4.

1.2. When Exercise Deemed Effected. Each exercise of this Warrant shall be deemed to have been effected immediately prior to the close of business on the Business Day on which this Warrant shall have been surrendered to the Company as provided in section 1.1, and at such time the person or persons in whose name or names any certificate or certificates for shares of Common Stock (or Other Securities) shall be issuable upon such exercise as provided in section 1.3 shall be deemed to have become the holder or holders of record thereof.

1.3. Delivery of Stock Certificates, etc. As soon as practicable after the exercise of this Warrant, in whole or in part, pursuant to the terms hereof, and in any event within ten Business Days thereafter (unless such exercise shall be in connection with an underwritten Public Offering of shares of Common Stock (or Other Securities) subject to this Warrant, in which event concurrently with such exercise), the Company at its expense (including the payment by it of any applicable taxes other than transfer taxes) will cause to be issued in the name of and delivered to the holder hereof or, subject to section 8, as such holder (upon payment by such holder of any applicable transfer taxes) may direct,

(a) a certificate or certificates for the number of duly authorized, validly issued, fully paid and nonassessable shares of Common Stock (or Other Securities) to which such holder shall be entitled upon such exercise plus, in lieu of any fractional share to which such holder would otherwise be entitled, cash in an amount equal to the same fraction of the Market Price per share of such Common Stock (or Other Securities) on the Business Day next preceding the date of such exercise, and

(b) in case such exercise is in part only, a new Warrant or Warrants of like tenor, calling in the aggregate on the face or faces thereof for the number of shares of

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Common Stock equal (without giving effect to any adjustment therein) to the number of such shares called for on the face of this Warrant minus the number of such shares designated by the holder upon such exercise as provided in section 1.1.

1.4. Company to Reaffirm Obligations. The Company will, at the time of or at any time after

each exercise of this Warrant, upon the request of the holder hereof or of any shares of Common Stock (or Other Securities) issued upon such exercise, acknowledge in writing its continuing obligation to afford to such holder all rights (including, without limitation, any right of registration of any shares of Common Stock (or Other Securities) issuable upon exercise of this Warrant pursuant to section 9) to which such holder shall continue to be entitled after such exercise in accordance with the terms of this Warrant, provided that if any such holder shall fail to make any such request, the failure shall not affect the continuing obligation of the Company to afford such rights to such holder.

1.5. Payment by Application of the Notes Upon any exercise of this Warrant, the holder hereof may, at its option, instruct the Company, by so specifying in the form of subscription submitted therewith as provided in section 1.1, to apply to the payment required by section 1.1 all or any part of the principal amount then unpaid and of the interest on such principal amount then accrued on any one or more Notes at the time held by such holder, in which case the Company will accept the aggregate amount of principal and accrued interest on such principal specified in such form of subscription in satisfaction of a like amount of such payment. In case less than the entire unpaid principal amount of any Note shall be so specified, the principal amount so specified shall be credited, as of the date of such exercise, against the installments of principal then remaining unpaid on such Note in the direct order of their maturity dates. Within ten Business Days after receipt of any such notice, the Company will pay to the holder of the Notes submitting such form of subscription, in the manner provided in such Notes and the Purchase Agreement, all unpaid interest accrued to the date of exercise of such Warrant on the principal amount so specified in such form of subscription that is not applied to the payment required by section 1.1 under this section 1.5. In the event that the entire unpaid principal amount of any Note is applied to the payment required by section 1.1 under this section 1.5, such Note shall be promptly surrendered and canceled by the holder thereof in accordance with the provisions of section 15 of the Purchase Agreement.

1.6. Exercise by Surrender of Warrants (Cashless Exercise). Upon any exercise of this Warrant, the holder hereof may, at its option, effect the payment required by section 1.1 in whole or in part, by so specifying in the form of subscription submitted therewith as provided in section 1.1, by surrendering this Warrant in exchange for the number of shares of Common Stock (prior to giving effect to any adjustments made therein pursuant to sections 2 through 4) equal to the product of (a) the number of shares of Common Stock designated in such form of subscription multiplied by (b) a fraction, the numerator of which is the Current Market Price less \$1.50 and the denominator of which is such Current Market Price.

## 2. Adjustment of Common Stock Issuable Upon Exercise.

2.1. Number of Shares; Warrant. The number of shares of Common Stock which the holder of this Warrant shall be entitled to receive upon each exercise hereof shall be determined by multiplying the number of shares of Common Stock which would otherwise (but for the provisions of this section 2) be issuable upon such exercise, as designated by the holder hereof pursuant to section 1.1, by a fraction of

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which (i) the numerator is \$1.50 and (ii) the denominator is the Warrant Price in effect on the date of such exercise. The "Warrant Price" shall initially be \$1.50 per share, shall be adjusted and readjusted from time to time as provided in this section 2 and, as so adjusted or readjusted, shall remain in effect until a further adjustment or readjustment thereof is required by this section 2.

### 2.2. Adjustment of Warrant Price

2.2.1. Issuance of Additional Shares of Common. Except as otherwise provided in, and subject to, the terms of this Warrant, in case the Company at any time or from time to time after July 31, 2001 (the "Initial Date") shall issue or sell Additional Shares of Common Stock (including Additional Shares of Common Stock deemed to be issued pursuant to section 2.3 or 2.4) without consideration or for a

consideration per share less than the Market Price in effect, in each case, on the date of and immediately prior to such issue or sale, then, and in each such case, subject to section 2.7, such Warrant Price shall be reduced, concurrently with such issue or sale, to a price (calculated to the nearest .001 of a cent) determined by multiplying such Warrant Price by a fraction,

(a) the numerator of which shall be (i) the number of shares of Common Stock outstanding immediately prior to such issue or sale plus (ii) the number of shares of Common Stock which the aggregate consideration received by the Company for the total number of such Additional Shares of Common Stock so issued or sold would purchase at the Market Price, and

(b) the denominator of which shall be the number of shares of Common Stock outstanding immediately after such issue or sale,

provided that, for the purposes of this section 2.2.1, (x) immediately after any Additional Shares of Common Stock are deemed to have been issued pursuant to section 2.3 or 2.4, such Additional Shares shall be deemed to be outstanding, and (y) treasury shares shall not be deemed to be outstanding.

2.2.2. Extraordinary Dividends and Distributions. Except as otherwise provided in, and subject to the terms of, this Warrant, in case the Company at any time or from time to time after the Initial Date shall declare, order, pay or make a dividend or other distribution (including, without limitation, any distribution of other or additional stock or other securities or property or Options by way of dividend or spin-off, reclassification, recapitalization or similar corporate rearrangement) on any Common Stock, other than (a) a dividend payable in Additional Shares of Common Stock or in Options for Common Stock or (b) a regular, periodic dividend payable in cash and declared out of the earned surplus of the Company as at the date hereof as increased by any credits and decreased by any debits made thereto after such date, then, and in each such case, except as provided in, and subject to the terms of this Warrant, the Warrant Price in effect immediately prior to the close of business on the record date fixed for the determination of holders of any class of securities entitled to receive such dividend or distribution shall be reduced, effective as of the close of business on such record date, to a price (calculated to the nearest .001 of a cent) determined by multiplying such Warrant Price by a fraction,

(i) the numerator of which shall be the Current Market Price in effect on such record date or, if the Common Stock trades on an ex-dividend basis, on the date prior to the commencement of ex-dividend trading, less the value of such dividend or distribution (as determined in good faith by the Board of Directors of the Company) applicable to one share of Common Stock, and

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(ii) the denominator of which shall be such Current Market Price.

2.3. Treatment of Options and Convertible Securities. Except as otherwise provided in, and subject to the terms of, this Warrant, in case the Company at any time or from time to time after the Initial Date shall issue, sell, grant or assume any Options or Convertible Securities, then, and in each such case, the maximum number of Additional Shares of Common Stock (as set forth in the instrument relating thereto, without regard to, any provisions contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or, in the case of Convertible Securities and Options therefor, the conversion or exchange of such Convertible Securities, shall be deemed to be issued for purposes of section 2.2.1 as of the time of such issue, sale, grant or assumption, provided that such Additional Shares of Common Stock shall not be deemed to have been issued unless the consideration per share (determined pursuant to section 2.5) of such shares would be less than the Market Price in effect, in each case, on the date of and immediately prior to such issue, sale, grant or assumption, as the case may be, and provided,

further, that in any such case in which Additional Shares of Common Stock are deemed to be issued,

(a) no further adjustment of the Warrant Price shall be made upon the subsequent issue or sale of Additional Shares of Common Stock or Convertible Securities upon the exercise of such Options or the conversion or exchange of such Convertible Securities;

(b) if such Options or Convertible Securities by their terms provide, with the passage of time or otherwise, for any increase in the consideration payable to the Company, or decrease in the number of Additional Shares of Common Stock issuable, upon the exercise, conversion or exchange thereof (by change of rate or otherwise), the Warrant Price computed upon the original issue, sale, grant or assumption thereof, and any subsequent adjustments based thereon, shall, upon any such increase or decrease becoming effective, be recomputed to reflect such increase or decrease insofar as it affects such Options, or the rights of conversion or exchange under such Convertible Securities, which are outstanding at such time;

(c) upon the expiration of any such Options or of the rights of conversion or exchange under any such Convertible Securities which shall not have been exercised (or upon purchase by the Company and cancellation or retirement of any such Options which shall not have been exercised or of any such Convertible Securities the rights of conversion or exchange under which shall not have been exercised), the Warrant Price computed upon the original issue, sale, grant or assumption thereof, and any subsequent adjustments based thereon, shall, upon such expiration (or such cancellation or retirement, as the case may be), be recomputed as if:

(i) in the case of Options for Common Stock or of Convertible Securities, the only Additional Shares of Common Stock issued or sold were the Additional Shares of Common Stock, if any, actually issued or sold upon the exercise of such Options or the conversion or exchange of such Convertible Securities and the consideration received therefor was (x) an amount equal to (A) the consideration actually received by the Company for the issue, sale, grant or assumption of all such Options, whether or not exercised, plus

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(B) the consideration actually received by the Company upon such exercise, minus (C) the consideration paid by the Company for any purchase of such Options which were not exercised, or (y) an amount equal to (A) the consideration actually received by the Company for the issue, sale, grant or assumption of all such Convertible Securities which were actually converted or exchanged, plus (B) the additional consideration, if any, actually received by the Company upon such conversion or exchange, minus (C) the consideration paid by the Company for any purchase of such Convertible Securities the rights of conversion or exchange under which were not exercised, and

(ii) in the case of Options for Convertible Securities, only the Convertible Securities, if any, actually issued or sold upon the exercise of such Options were issued at the time of the issue, sale, grant or assumption of such Options, and the consideration received by the Company for the Additional Shares of Common Stock deemed to have then been issued was an amount equal to (x) the consideration actually received by the Company for the issue, sale, grant or assumption of all such Options, whether or not exercised, plus (y) the consideration deemed to have been received by the Company (pursuant to



section 2.5) upon the issue or sale of the Convertible Securities with respect to which such Options were actually exercised, minus (z) the consideration paid by the Company for any purchase of such Options which were not exercised;

(d) no readjustment pursuant to subdivision (b) or (c) above shall have the effect of increasing the Warrant Price by an amount in excess of the amount of the adjustment thereof originally made in respect of the issue, sale, grant or assumption of such Options or Convertible Securities; and

(e) in the case of any such Options which expire by their terms not more than 30 days after the date of issue, sale, grant or assumption thereof, no adjustment of the Warrant Price shall be made until the expiration or exercise of all such Options, whereupon such adjustment shall be made in the manner provided in subdivision (c) above.

In case at any time after the Initial Date the Company shall be required to increase the number of Additional Shares of Common Stock subject to any Option or into which any Convertible Securities (other than the Warrants) are convertible or exchangeable pursuant to the operation of anti-dilution provisions applicable thereto, such Additional Shares shall be deemed to be issued for purposes of section 2.1 as of the time of such increase.

2.4. Treatment of Stock Dividends, Stock Splits, etc. In case the Company at any time or from time to time after the Initial Date shall declare or pay any dividend or other distribution on any class of stock of the Company payable in Common Stock, or shall effect a subdivision of the outstanding shares of Common Stock into a greater number of shares of Common Stock (by reclassification or otherwise than by payment of a dividend in Common Stock), then, and in each such case, Additional Shares of Common Stock shall be deemed to have been issued (a) in the case of any such dividend, immediately after the close of business on the record date for the determination of holders of any class of securities entitled to receive such dividend, or (b) in the case of any such subdivision, at the close of business on the day immediately prior to the day upon which such corporate action becomes effective.

2.5. Computation of Consideration. For the purposes of this section 2:

(a) The consideration for the issue or sale of any Additional Shares of Common Stock or for the issue, sale, grant or assumption of any Options or Convertible Securities, irrespective of the accounting treatment of such consideration, shall

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(i) insofar as it consists of cash, be computed at the amount of cash received by the Company, without deducting any expenses paid or incurred by the Company or any commissions or compensation paid or concessions or discounts allowed to underwriters, dealers or others performing similar services and any accrued interest or dividends in connection with such issue or sale,

(ii) insofar as it consists of consideration (including securities) other than cash, be computed at the Fair Value thereof at the time of such issue or sale, without deducting any expenses paid or incurred by the Company for any commissions or compensation paid or concessions or discounts allowed to underwriters, dealers or others performing similar services and any accrued interest or dividends in connection with such issue or sale, and

(iii) in case Additional Shares of Common Stock are issued or sold or

Convertible Securities are issued, sold, granted or assumed together with other stock or securities or other assets of the Company for a consideration which covers both, be the proportion of such consideration so received, computed as provided in subdivisions (i) and (ii) above, allocable to such Additional Shares of Common Stock or Convertible Securities, as the case may be, all as determined in good faith by the Board of Directors of the Company.

(b) All Options issued, sold, granted or assumed together with other stock or securities or other assets of the Company for a consideration which covers both, all Additional Shares of Common Stock, Options or Convertible Securities issued in payment of any dividend or other distribution on any class of stock of the Company and all Additional Shares of Common Stock issued to effect a subdivision of the outstanding shares of Common Stock into a greater number of shares of Common Stock (by reclassification or otherwise than by payment of a dividend in Common Stock) shall be deemed to have been issued without consideration.

(c) Additional Shares of Common Stock deemed to have been issued for consideration pursuant to section 2.3, relating to Options and Convertible Securities, shall be deemed to have been issued for a consideration per share determined by dividing

(i) the total amount, if any, received and receivable by the Company as consideration for the issue, sale, grant or assumption of the Options or Convertible Securities in question, plus the aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Company upon the exercise of such Options or the conversion or exchange of such Convertible Securities or, in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities, in each case computing such consideration as provided in the foregoing subdivision (a), by

(ii) the number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent

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adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities.

(d) Additional Shares of Common Stock issued or deemed to have been issued pursuant to the operation of anti-dilution provisions applicable to Convertible Securities (other than the Warrants), Options or other securities of the Company (either as a result of the adjustments provided for by the Warrants or otherwise) shall be deemed to have been issued without consideration.

2.6. Adjustments for Combinations, etc. 2.6 Adjustments for Combinations, etc. In case the outstanding shares of Common Stock shall be combined or consolidated, by reclassification or otherwise, into a lesser number of shares of Common Stock, the Warrant Price in effect immediately prior to such combination or consolidation shall, concurrently with the effectiveness of such combination or consolidation, be proportionately increased.

2.7. Minimum Adjustment of Warrant Price. If the amount of any adjustment of the Warrant

Price required pursuant to this section 2 would be less than one one-hundredth (.01) of a cent, such amount shall be carried forward and adjustment with respect thereto made at the time of and together with any subsequent adjustment which, together with such amount and any other amount or amounts so carried forward, shall aggregate at least one one-hundredth (.01) of a cent.

3. Consolidation, Merger, Sale of Assets, Reorganization, etc. In case the Company, after the Initial Date, (a) shall consolidate with or merge into any other Person and shall not be the continuing or surviving corporation of such consolidation or merger, or (b) shall permit any other Person to consolidate with or merge into the Company and the Company shall be the continuing or surviving Person but, in connection with such consolidation or merger, Common Stock or Other Securities shall be changed into or exchanged for cash, stock or other securities of any other Person or any other property, or (c) shall transfer all or substantially all of its properties and assets to any other Person, or (d) shall effect a capital reorganization or reclassification of Common Stock or Other Securities (other than a capital reorganization or reclassification resulting in the issue of Additional Shares of Common Stock for which adjustment in the Warrant Price is provided in section 2.2.1 or 2.2.2), then, and in the case of each such transaction, the Company shall give written notice thereof to each holder of any Warrant not less than 30 days prior to the consummation thereof and proper provision shall be made so that, upon the basis and the terms and in the manner provided in this section 3, the holder of this Warrant, upon the consummation of such transaction, shall be entitled to receive, at the aggregate Warrant Price in effect at the time of such consummation for all Common Stock (or Other Securities) issuable upon such exercise immediately prior to such consummation, in lieu of the Common Stock (or Other Securities) issuable upon such exercise prior to such consummation, the amount of cash, securities or other property to which such holder would actually have been entitled as a shareholder upon such consummation if such holder had exercised this Warrant immediately prior thereto, subject to adjustments (subsequent to such consummation) as nearly equivalent as possible to the adjustments provided for in section 2 and this section 3, provided that if a purchase, tender or exchange offer shall have been made to and accepted by the holders of Common Stock under circumstances in which, upon completion of such purchase, tender or exchange offer, the maker thereof, together with members of any group (within the meaning of Rule 13d-5(b)(1) under the Exchange Act) of which such maker is a part, and together with any affiliate or associate of such maker (within the meaning of Rule 12b-2 under the Exchange Act) and any

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members of any such group of which any such affiliate or associate is a part, own beneficially (within the meaning of Rule 13d-3 under the Exchange Act) more than 50% of the outstanding shares of Common Stock, and if the holder of this Warrant so designates in such notice given to the Company, the holder of this Warrant shall be entitled to receive the amount of cash, securities or other property to which such holder would actually have been entitled as a shareholder if the holder of this Warrant had exercised this Warrant prior to the expiration of such purchase, tender or exchange offer, accepted such offer and all of the Common Stock held by such holder had been purchased pursuant to such purchase, tender or exchange offer, subject to adjustments (from and after the consummation of such purchase, tender or exchange offer) as nearly equivalent as possible to the adjustments provided for in section 2 and this section 3.

4. Other Dilutive Events . In case any event shall occur as to which the provisions of section 2 or section 3 are not strictly applicable but the failure to make any adjustment would not fairly protect the purchase rights represented by this Warrant in accordance with the essential intent and principles of such sections, then, in each such case, the Company shall appoint a firm of independent public accountants of recognized national standing (which may be the regular auditors of the Company), which shall give their opinion upon the adjustment, if any, on a basis consistent with the essential intent and principles established in sections 2 and 3, necessary to preserve, without dilution, the purchase rights represented by this Warrant. Upon receipt of such opinion the Company will promptly mail a copy thereof to the holder of this Warrant and shall make the adjustments described therein.

5. No Dilution or Impairment . The Company will not, by amendment of its certificate of incorporation or through any consolidation, merger, reorganization, transfer of assets, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms. Without limiting the generality of the foregoing, the Company (a) will not permit the par value of any shares of stock receivable upon the exercise of this Warrant to exceed the amount payable therefor upon such exercise, (b) will take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable shares of stock upon the exercise of all of the Warrants from time to time outstanding, (c) will not take any action which results in any adjustment of the Warrant Price if the total number of shares of Common Stock (or Other Securities) issuable after the action upon the exercise of all of the Warrants would exceed the total number of shares of Common Stock (or other Securities) then authorized by the Company's certificate of incorporation and available for the purpose of issue upon such exercise and, (d) will not issue any capital stock of any class which has the right to more than one vote per share.

6. Accountants' Report as to Adjustments . In each case of any adjustment or readjustment in the shares of Common Stock (or Other Securities) issuable upon the exercise of the Warrants, the Company at its expense will promptly compute such adjustment or readjustment in accordance with the terms of the Warrants and, if requested in writing to do so by any holder of a Warrant, will cause independent public accountants of recognized national standing selected by the Company (which may be the regular auditors of the Company) to verify such computation. The Company or, if so requested, the Company's independent public accountants, will prepare a report setting forth such adjustment or readjustment and showing in reasonable detail the method of calculation thereof and the facts upon which such adjustment or readjustment is based, including without limitation a statement of (a) the consideration received or to be received by the

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Company for any Additional Shares of Common Stock issued or sold or deemed to have been issued, (b) the number of shares of Common Stock outstanding or deemed to be outstanding, and (c) the Warrant Price in effect immediately prior to such issue or sale and as adjusted and readjusted (if required by section 2) on account thereof. The Company will forthwith mail a copy of each such report to each holder of a Warrant and will, upon the written request at any time of any holder of a Warrant, furnish to such holder a like report setting forth the Warrant Price at the time in effect and showing in reasonable detail how it was calculated. The Company will also keep copies of all such reports at its principal office and will cause the same to be available for inspection at such office during normal business hours by any holder of a Warrant or any prospective purchaser of a Warrant designated by the holder thereof.

7. Notices of Corporate Action. In the event of

(a) any taking by the Company of a record of the holders of any class of securities for the purpose of determining the holders thereof who are entitled to receive any dividend (other than a regular periodic dividend payable in cash out of earned surplus) or other distribution, or any right to subscribe for, purchase or otherwise acquire any shares of stock of any class or any other securities or property, or to receive any other right, or

(b) any capital reorganization of the Company, any reclassification or recapitalization of the capital stock of the Company or any consolidation or merger involving the Company and any other Person or any transfer of all or substantially all the assets of the Company to any other Person, or

(c) any voluntary or involuntary dissolution, liquidation or winding-up of the Company, the Company will mail to each holder of a Warrant a notice specifying (i) the date or expected date on which

any such record is to be taken for the purpose of such dividend, distribution or right, and the amount and character of such dividend, distribution or right, and (ii) the date or expected date on which any such reorganization, reclassification, recapitalization, consolidation, merger, transfer, dissolution, liquidation or winding-up is to take place and the time, if any such time is to be fixed, as of which the holders of record of Common Stock (or Other Securities) shall be entitled to exchange their shares of Common Stock (or Other Securities) for the securities or other property deliverable upon such reorganization, reclassification, recapitalization, consolidation, merger, transfer, dissolution, liquidation or winding-up. Such notice shall be mailed at least 20 days prior to the date therein specified, in the case of any date referred to in the foregoing subdivision (i), and at least 90 days prior to the date therein specified, in the case of the date referred to in the foregoing subdivision (ii).

## 8. Restrictions on Transfer

8.1. Restrictive Legends. Except as otherwise permitted by this section 8, each Warrant originally issued pursuant to the Purchase Agreement and each Warrant issued upon direct or indirect transfer or in substitution for any Warrant pursuant to section 13 shall be stamped or otherwise imprinted with a legend in substantially the following form:

"This Warrant and any shares acquired upon the exercise of this Warrant have not been registered under the Securities Act of 1933 and may not be transferred in the absence of such registration or an exemption therefrom under such Act."

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Except as otherwise permitted by this section 8, each certificate for Common Stock (or Other Securities) issued upon the exercise of any Warrant and each certificate issued upon the direct or indirect transfer of any such Common Stock (or Other Securities) shall be stamped or otherwise imprinted with a legend in substantially the following form:

"The shares represented by this certificate have not been registered under the Securities Act of 1933 and may not be transferred in the absence of such registration or an exemption therefrom under such Act. Such shares are also subject to certain restrictions on transferability imposed by Common Stock Purchase Warrants expiring July 31, 2008, a copy of which is on file at the offices of the Company."

8.2. Notice of Proposed Transfer; Opinions of Counsel. Prior to any transfer of any Restricted Securities which are not registered under an effective registration statement under the Securities Act (other than a transfer pursuant to Rule 144 or any comparable rule under such Act), the holder thereof will give written notice to the Company of such holder's intention to effect such transfer and to comply in all other respects with this section 8.2. Each such notice (a) shall describe the manner and circumstances of the proposed transfer in sufficient detail to enable counsel to render the opinions referred to below, and (b) shall designate counsel for the holder giving such notice (which counsel shall be reasonably acceptable to the Company). The holder giving such notice will submit a copy thereof to the counsel designated in such notice. The following provisions shall then apply:

(i) If in the opinion of counsel for the holder the proposed transfer may be effected without registration, which opinion must be reasonably acceptable to counsel for the Company, such holder shall thereupon be entitled to transfer such Restricted Securities in accordance with the terms of the notice delivered by such holder to the Company. Each Warrant or certificate, if any, issued upon or in connection with such transfer shall bear the appropriate restrictive legend set forth in section 8.1 unless, in the opinion of such counsel, which opinion must be reasonably acceptable to counsel for the Company, such legend is no longer required to insure compliance with the

Securities Act. No transfer of Restricted Securities shall be made by the holder thereof and no legend may be removed from any certificates evidencing Restricted Securities unless the Company receives an opinion from its counsel indicating that the opinion of counsel received by the holder is reasonably acceptable to it and consistent with applicable law.

(ii) If the opinion of such counsel for the holder is not to the effect that the proposed transfer may legally be effected without registration of such Restricted Securities under the Securities Act, such holder shall not be entitled to transfer such Restricted Securities (other than in a transfer pursuant to Rule 144 or any comparable rule under the Securities Act) until the conditions specified in subdivision (i) above shall be satisfied or until registration of such Restricted Securities under the Securities Act has become effective.

Notwithstanding the foregoing provisions of this section 8.2, the holder of any Restricted Securities shall be permitted to transfer any such Restricted Securities pursuant to Rule 144A under the Securities Act, provided that each transferee agrees in writing to be bound by all the restrictions on transfer of such Restricted Securities contained in this section 8.2 and the terms of this Warrant.

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8.3. Termination of Restrictions. The restrictions imposed by this section 8 upon the transferability of Restricted Securities shall cease and terminate as to any particular Restricted Securities (a) when such securities shall have been effectively registered under the Securities Act and disposed of in accordance with the registration statement covering such Restricted Securities, (b) when, in the opinions of both counsel for the holder thereof and counsel for the Company, such restrictions are no longer required in order to insure compliance with the Securities Act, or (c) when such securities have been beneficially owned, by a person who has not been an affiliate of the Company for at least three months, for a period of at least two years, all as determined under Rule 144 under the Securities Act. Whenever such restrictions shall terminate as to any Restricted Securities, as soon as practicable thereafter and in any event within ten Business Days, the holder thereof shall be entitled to receive from the Company, without expense (other than transfer taxes, if any), new securities of like tenor not bearing the applicable legend set forth in section 8.1 hereof.

9. Registration under Securities Act, etc. The holders of Registrable Securities shall have the rights with respect to the registration thereof set forth in the Registration Rights Agreement.

10. Availability of Information. The Company will cooperate with each holder of any Restricted Securities in supplying such information as may be necessary for such holder to complete and file any information reporting forms presently or hereafter required by the Commission as a condition to the availability of an exemption from the Securities Act for the sale of any Restricted Securities. The Company will furnish to each holder of any Warrants, promptly upon their becoming available, copies of all financial statements, reports, notices and proxy statements sent or made available generally by the Company to its stockholders, and copies of all regular and periodic reports and all registration statements and prospectuses filed by the Company with any securities exchange or with the commission.

11. Reservation of Stock, etc. The Company will at all times reserve and keep available, solely for issuance and delivery upon exercise of the Warrants, the number of shares of Common Stock (or Other Securities) from time to time issuable upon exercise of all Warrants at the time outstanding. All shares of Common Stock (or Other Securities) shall be duly authorized and, when issued upon such exercise, shall be validly issued and, in the case of shares, fully paid and nonassessable with no liability on the part of the holders thereof.

12. Listing on Securities Exchange. The Company will list on each national securities exchange on

which any Common Stock may at any time be listed, subject to official notice of issuance upon exercise of the Warrants, and will maintain such listing of, all shares of Common Stock from time to time issuable upon exercise of the Warrants. The Company will also so list on each national securities exchange, and will maintain such listing of, any other securities if at the time any securities of the same class shall be listed on such national securities exchange by the Company.

### 13. Ownership, Transfer and Substitution of Warrants

13.1. Ownership of Warrants. The Company may treat the person in whose name any Warrant is registered on the register kept at the principal office of the Company as the owner and holder thereof for all purposes, notwithstanding any notice to the contrary, except that, if and when any Warrant is properly assigned in blank, the Company may (but shall not be obligated to) treat the bearer thereof as the owner of

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such Warrant for all purposes, notwithstanding any notice to the contrary. Subject to section 8, a Warrant, properly assigned, may be exercised by a new holder without first having a new Warrant issued.

13.2. Transfer and Exchange of Warrants Upon the surrender of any Warrant, properly endorsed, for registration of transfer or for exchange at the principal office of the Company, the Company at its expense will (subject to compliance with section 8, if applicable) execute and deliver to or upon the order of the holder thereof a new Warrant or Warrants of like tenor, in the name of such holder or as such holder (upon payment by such holder of any applicable transfer taxes) may direct, calling in the aggregate on the face or faces thereof for the number of shares of Common Stock called for on the face or faces of the Warrant or Warrants so surrendered.

13.3. Replacement of Warrants. Upon receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of any Warrant and, in the case of any such loss, theft or destruction of any Warrant held by a Person other than any institutional investor, upon delivery of indemnity reasonably satisfactory to the Company in form and amount or, in the case of any such mutilation, upon surrender of such Warrant for cancellation at the principal office of the Company, the Company at its expense will execute and deliver, in lieu thereof, a new Warrant of like tenor.

14. Definitions. As used herein, unless the context otherwise requires, the following terms have the following respective meanings:

Additional Shares of Common Stock: all shares (including treasury shares) of Common Stock issued or sold (or, pursuant to section 2.3 or 2.4, deemed to be issued) by the Company after the Initial Date hereof, whether or not subsequently reacquired or retired by the Company, other than (a) shares of Common Stock issued upon the exercise of Warrants, (b) shares of Common Stock issued upon the exercise, conversion or exchange of any Excluded Securities.

AMI-PESI: Associated Mezzanine Investors-PESI, L.P., a limited partnership organized and existing under the laws of the State of Delaware.

Bridge East: Bridge East Capital, L.P., a limited partnership organized and existing under the laws of the Cayman Islands.

Business Day: any day other than a Saturday or a Sunday or a day on which commercial banking institutions in the City of New York are authorized by law to be closed, provided that, in determining the period within which certificates or Warrants are to be issued and delivered pursuant to section 1.3 at a time when shares of Common Stock (or Other Securities) are listed or admitted to trading on any national securities exchange or in the over-the-counter market and in determining the Market Price of

any securities listed or admitted to trading on any national securities exchange or in the over-the-counter market, "Business Day" shall mean any day when the principal exchange in which securities are then listed or admitted to trading is open for trading or, if such securities are traded in the over-the-counter market in the United States, such market is open for trading, and provided, further, that any reference to "days" (unless Business Days are specified) shall mean calendar days.

Closing Date: the meaning specified in section 10.3.

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Commission: the Securities and Exchange Commission or any other Federal agency at the time administering the Securities Act or the Exchange Act, whichever is the relevant statute for the particular purpose.

Common Stock: the Company's Common Stock, par value \$.001 per share, as constituted on the date hereof, any stock into which such Common Stock shall have been changed or any stock resulting from any reclassification of such Common Stock, and all other stock of any class or classes (however designated) of the Company the holders of which have the right, without limitation as to amount, either to all or to a share of the balance of current dividends and liquidating dividends after the payment of dividends and distributions on any shares entitled to preference.

Company: Perma-Fix Environmental Services, Inc., a Delaware corporation.

Convertible Securities: any evidences of indebtedness, shares of stock (other than Common Stock) or other securities directly or indirectly convertible into or exchangeable for Additional Shares of Common Stock.

Current Market Price: on any date specified herein, (a) with respect to Common Stock or to Voting Common Stock (or equivalent equity interests) of the Company, (i) the average daily Market Price during the period of the most recent 20 consecutive Business Days ending on such date, or (ii) if shares of Common Stock or such Voting Common Stock (or equivalent equity interests), as the case may be, are not then listed or admitted to trading on any national securities exchange and if the closing bid and asked prices thereof are not then quoted or published in the over-the-counter market, the Market Price on such date; and (b) with respect to any other securities, the Market Price on such date.

Exchange Act: the Securities Exchange Act of 1934, or any similar Federal statute, and the rules and regulations of the commission thereunder, all as the same shall be in effect at the time. Reference to a particular section of the Securities Exchange Act of 1934 shall include a reference to the comparable section, if any, of any such similar Federal statute.

Excluded Securities: the Options and Convertible Securities listed on the Schedule I hereto.

Fair Value: with respect to any securities or other property, the Fair Value thereof as of a date which is within 15 days of the date as of which the determination is to be made (a) determined by an agreement between the Company and the Requisite Holders of Warrants or (b) if the Company and the Requisite Holders of Warrants fail to agree, determined jointly by an independent investment banking firm retained by the Company and by an independent investment banking firm retained by the Requisite Holders of Warrants, either of which firms may be an independent investment banking firm regularly retained by the Company or any such holder or (c) if the firms so retained by the Company and by such holders shall be unable to reach a joint determination within 15 Business Days of the retention of the last firm so retained, determined by another independent investment banking firm which is not a regular investment banking firm of the Company or any such holder chosen by the first two such firms.



Initial Date: the meaning specified in section 2.2.

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Market Price: on any date specified herein, (a) with respect to Common Stock or Voting Common Stock (or equivalent equity interests) of the Company, the amount per share equal to (i) the last sale price of shares of such security, regular way, on such date or, if no such sale takes place on such date, the average of the closing bid and asked prices thereof on such date, in each case as officially reported on the principal national securities exchange on which the same are then listed or admitted to trading, or (ii) if no shares of such security are then listed or admitted to trading on any national securities exchange but such security is designated as a national market system security by the NASD, the last trading price of such security on such date, or if such security is not so designated, the average of the reported closing bid and asked prices thereof on such date as shown by the NASD automated quotation system or, if no shares thereof are then quoted in such system, as published by the National Quotation Bureau, Incorporated or any successor organization, and in either case as reported by any member firm of the New York Stock Exchange selected by the Company, or (iii) if no shares of such security are then listed or admitted to trading on any national exchange or designated as a national market system security and if no closing bid and asked prices thereof are then so quoted or published in the over-the-counter market, the higher of (x) the book value thereof as determined by agreement between the Company and the Requisite Holders of Warrants, or if the Company and the Requisite Holders of Warrants fail to agree, by any firm of independent public accountants of recognized standing selected by the Board of Directors of the Company, as of the last day of any month ending within 60 days preceding the date as of which the determination is to be made or (y) the fair value thereof determined in good faith by the Board of Directors of the issuer thereof as of a date which is within 15 days of the date as of which the determination is to be made; and (b) with respect to any other securities, the fair value thereof determined in good faith by the Board of Directors of the Company as of a date which is within 15 days of the date as of which the determination is to be made.

NASD: the National Association of Securities Dealers.

Notes: the meaning specified in the opening paragraphs of this Warrant.

Options: rights, options or warrants to subscribe for, purchase or otherwise acquire either Additional Shares of Common Stock or Convertible securities.

Other Securities: any stock (other than Common Stock) and other securities of the Company or any other Person (corporate or otherwise) which the holders of the Warrants at any time shall be entitled to receive, or shall have received, upon the exercise of the Warrants, in lieu of or in addition to Common Stock, or which at any time shall be issuable or shall have been issued in exchange for or in replacement of Common Stock or Other Securities pursuant to section 3 or otherwise.

Person: an individual, a partnership, an association, a joint venture, a corporation, a limited liability company, a business, a trust, an unincorporated organization or a government or any department, agency or subdivision thereof.

Public Offering: any offering of Common Stock to the public pursuant to an effective registration statement under the Securities Act.

Purchase Agreement: the meaning specified in the opening paragraphs of this Warrant.

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Registrable Securities: (a) any shares of Common Stock or Other Securities issued or issuable upon exercise of the Warrants and (b) any securities issued or issuable with respect to any Common Stock or Other Securities referred to in subdivision (a) by way of stock dividend or stock split or in connection with a combination of shares, recapitalization, merger, consolidation or other reorganization or otherwise. As to any particular Registrable Securities, once issued such securities shall cease to be Registrable Securities when (x) a registration statement with respect to the sale of such securities shall have become effective under the Securities Act and such securities shall have been disposed of in accordance with such registration statement, (y) they shall have been distributed to the public pursuant to Rule 144 (or any successor provision) under the Securities Act, or (z) they shall have ceased to be outstanding.

Registration Rights Agreement: the Registration Rights Agreement, dated as of July 31, 2001, executed and delivered by the Company, AMI-PESI and Bridge East, substantially in the form of Exhibit E to the Purchase Agreement, as may be amended from time to time.

Requisite Holders of Warrants: the holders of at least 60% of all the Warrants at the time outstanding determined on the basis of the number of shares of Common Stock or Other Securities deliverable upon exercise thereof.

Restricted Securities: (a) any Warrants bearing the applicable legend set forth in section 8.1, (b) any shares of Common Stock (or Other Securities) which have been issued upon the exercise of Warrants and which are evidenced by a certificate or certificates bearing the applicable legend set forth in such section, and (c) unless the context otherwise requires, any shares of Common Stock (or Other Securities) which are at the time issuable upon the exercise of Warrants and which, when so issued, will be evidenced by a certificate or certificates bearing the applicable legend set forth in such section.

Securities Act: the Securities Act of 1933, or any similar Federal statute, and the rules and regulations of the Commission thereunder, all as the same shall be in effect at the time. Reference to a particular section of the Securities Act of 1933 shall include a reference to the comparable section, if any, of any such similar Federal statute.

Subsidiary: any corporation, association or other business entity at least 50% (by number of votes) of the Voting Common Stock of which is at the time owned by the Company or by one or more Subsidiaries or by the Company and one or more Subsidiaries.

Transfer: unless the context otherwise requires, any sale, assignment, pledge or other disposition of any security, or of any interest therein, which could constitute a "sale" as that term is defined in section 2(3) of the Securities Act.

Voting Common Stock: with respect to any corporation, association or other business entity, stock of any class or classes (or equivalent interest), if the holders of the stock of such class or classes (or equivalent interests) are ordinarily, in the absence of contingencies, entitled to vote for the election of a majority of the directors (or persons performing similar functions) of such corporation, association or business entity, even if the right so to vote has been suspended by the happening of such a contingency.

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Warrant Price: the meaning specified in section 2.1.

Warrants: the meaning specified in the opening paragraphs of this Warrant.

15. Remedies. The Company stipulates that the remedies at law of the holder of this Warrant in the event of any default or threatened default by the Company in the performance of or compliance with any of the terms of this Warrant are not and will not be adequate and that, to the fullest extent permitted by law, such terms may be specifically enforced by a decree for the specific performance of any agreement contained herein or by an injunction against a violation of any of the terms hereof or otherwise.

16. No Rights or Liabilities as Stockholder . Nothing contained in this Warrant shall be construed as conferring upon the holder hereof any rights as a stockholder of the Company or as imposing any liabilities on such holder to purchase any securities or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors or stockholders of the Company or otherwise.

17. Notices. All notices and other communications under this Agreement shall be in writing and shall be delivered by hand, facsimile transmission or courier service, or mailed by registered or certified mail, return receipt requested, addressed (a) if to any holder of any Warrant or any holder of any Common Stock (or Other Securities), at the registered address of such holder as set forth in the register kept at the principal office of the Company, or (b) if to the Company, to the attention of its Chief Financial Officer, at its principal office, provided that the exercise of any Warrant shall be effected in the manner provided in section 1.

18. Miscellaneous . This Warrant and any term hereof may be changed, waived, discharged or terminated only by an instrument in writing signed by the party against which enforcement of such change, waiver, discharge or termination is sought. The agreements of the Company contained in this Warrant, other than those applicable solely to the Warrants and the holders thereof, shall inure to the benefit of and be enforceable by any holder or holders at the time of any Common Stock (or Other Securities) issued upon the exercise of Warrants, whether so expressed or not. This Warrant shall be construed and enforced in accordance with and governed by the laws of the State of New York (except with respect to such matters as are governed by the corporate law of the State of Delaware). The section headings in this Warrant are for purposes of convenience only and shall not constitute a part hereof.

19. Expiration . The right to exercise this Warrant shall expire at 3 P.M., New York City time, on July 31, 2008.

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

By /s/ Louis Centofanti  
Dr. Louis F. Centofanti  
Chief Executive Officer  
(the "Company")

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### SUBSCRIPTION

The undersigned, \_\_\_\_\_, pursuant to the provisions of the attached Warrant, hereby irrevocably elects to subscribe for and purchase \_\_\_\_\_ shares of the Common Stock of PERMA-FIX ENVIRONMENTAL SERVICES, INC., covered by said Warrant, and hereby tenders payment by delivery of \$\_\_\_\_\_ in cash or by certified or official bank check for the exercise price per share required under the Warrant which accompanies this notice.

Dated: \_\_\_\_\_

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

Tax Identification or  
Social Security Number \_\_\_\_\_

### **ASSIGNMENT**

FOR VALUE RECEIVED, \_\_\_\_\_ hereby sells, assigns and transfers unto \_\_\_\_\_ the foregoing Warrant and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer said Warrant on the books of PERMA-FIX ENVIRONMENTAL SERVICES, INC.

Dated:\_\_\_\_\_

Signature:\_\_\_\_\_

Address:\_\_\_\_\_

Tax Identification or  
Social Security Number\_\_\_\_\_

### **PARTIAL ASSIGNMENT**

FOR VALUE RECEIVED, \_\_\_\_\_ hereby sells, assigns and transfers unto \_\_\_\_\_ the right to purchase \_\_\_\_\_ shares of the Common Stock of PERMA-FIX ENVIRONMENTAL SERVICES, INC. by the foregoing Warrant and all rights evidenced thereby, and does irrevocably constitute and appoint \_\_\_\_\_, attorney, to transfer that part of said Warrant on the books of PERMA-FIX ENVIRONMENTAL SERVICES, INC.

Dated:\_\_\_\_\_

Signature:\_\_\_\_\_

Address:\_\_\_\_\_

Tax Identification or  
Social Security Number\_\_\_\_\_

CONSENT OF INDEPENDENT  
CERTIFIED PUBLIC ACCOUNTANTS

Perma-Fix Environmental Services, Inc.  
Gainesville, Florida

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated March 9, 2001, relating to the consolidated financial statements and schedule of Perma-Fix Environmental Services, Inc. and subsidiaries appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2000. We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ BDO Seidman, LLP

Chicago, Illinois  
September 28, 2001