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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549**

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**FORM S-3  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933**

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**HCW BIOLOGICS INC.**  
(Exact name of registrant as specified in its charter)

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

**82-5024477**  
(I.R.S. Employer  
Identification No.)

**2929 N Commerce Parkway  
Miramar, FL 33025  
(954) 842-2024**  
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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**Hing C. Wong, Ph.D.  
Chief Executive Officer  
HCW Biologics Inc.  
2929 N Commerce Parkway  
Miramar, FL 33025  
(954) 842-2024**  
(Name, address, including zip code, and telephone number, including area code, of agent for service)

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*Copy to:*

**William L. Hughes, Esq.  
Orrick, Herrington & Sutcliffe LLP  
The Orrick Building  
405 Howard Street  
San Francisco, CA 94105  
(415) 773-5700**

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**Approximate date of commencement of proposed sale to the public:** From time to time after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered pursuant to 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, please 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 earliest effective registration statement for the same offering:

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
Emerging growth company	<input checked="" type="checkbox"/>		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

**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, as amended, or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.**

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## EXPLANATORY NOTE

This registration statement contains two prospectuses:

- a base prospectus, which covers the offering, issuance and sale by us of up to \$100 million of our common stock, preferred stock, debt securities, warrants to purchase our common stock, preferred stock or debt securities, subscription rights to purchase our common stock, preferred stock or debt securities and/or units consisting of some or all of these securities; and
- a sales agreement prospectus supplement covering the offering, issuance and sale by us of up to a maximum aggregate offering price of \$15.5 million of our common stock that may be issued and sold under a Capital on Demand™ Sales Agreement (the “Sales Agreement”) dated August 19, 2022, with JonesTrading Institutional Services LLC.

The base prospectus immediately follows this explanatory note. The specific terms of any securities to be offered pursuant to the base prospectus will be specified in a prospectus supplement to the base prospectus. The sales agreement prospectus supplement immediately follows the base prospectus.

The sales agreement prospectus supplement immediately follows the base prospectus. The common stock that may be offered, issued and sold by us under the sales agreement prospectus supplement is included in the \$100 million of securities that may be offered, issued and sold by us under the base prospectus. Upon termination of the Sales Agreement, any portion of the \$15.5 million included in the sales agreement prospectus supplement that is not sold pursuant to the Sales Agreement will be available for sale in other offerings pursuant to the base prospectus and a corresponding prospectus supplement, and if no shares are sold under the Sales Agreement, the full \$15.5 million of securities may be sold in other offerings pursuant to the base prospectus and a corresponding prospectus supplement.

**The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission 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.**

**SUBJECT TO COMPLETION, DATED AUGUST 19, 2022**

**PROSPECTUS**

**\$100,000,000**



## **HCW Biologics Inc.**

**Common Stock, Preferred Stock,**

**Debt Securities, Warrants, Subscription Rights and Units**

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From time to time, we may offer up to \$100 million aggregate dollar amount of shares of our common stock or preferred stock, debt securities, warrants to purchase our common stock, preferred stock or debt securities, subscription rights to purchase our common stock, preferred stock or debt securities and/or units consisting of some or all of these securities, in any combination, together or separately, in one or more offerings, in amounts, at prices and on the terms that we will determine at the time of the offering and which will be set forth in a prospectus supplement and any related free writing prospectus. The prospectus supplement and any related free writing prospectus may also add, update or change information contained in this prospectus. The total amount of these securities will have an initial aggregate offering price of up to \$100 million.

You should read this prospectus, the information incorporated, or deemed to be incorporated, by reference in this prospectus, and any applicable prospectus supplement and related free writing prospectus carefully before you invest.

The aggregate market value of our outstanding common stock held by non-affiliates was approximately \$51.8 million, which was calculated based on 20,151,063 shares of outstanding common stock held by non-affiliates as of August 10, 2022, and a price per share of \$2.57, the closing price of our common stock on July 12, 2022. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities pursuant to this registration statement with a value more than one-third of the aggregate market value of our common stock held by non-affiliates in any 12-month period, so long as the aggregate market value of our common stock held by non-affiliates is less than \$75.0 million. In the event that subsequent to the effective date of this registration statement, the aggregate market value of our outstanding common stock held by non-affiliates equals or exceeds \$75.0 million, then the one-third limitation on sales shall not apply to additional sales made pursuant to this registration statement. We have not sold any securities pursuant to General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to, and including, the date of this registration statement.

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[Table of Contents](#)

Our common stock is traded on The Nasdaq Global Market under the symbol “HCWB”. On August 18, 2022 the last reported sales price for our common stock was \$2.26 per share. None of the other securities we may offer are currently traded on any securities exchange. The applicable prospectus supplement and any related free writing prospectus will contain information, where applicable, as to any other listing on The Nasdaq Global Market or any securities market or exchange of the securities covered by the prospectus supplement and any related free writing prospectus.

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**Investing in our securities involves certain risks. See “[Risk Factors](#)” included in any accompanying prospectus supplement and in the documents incorporated by reference in this prospectus for a discussion of the factors you should carefully consider before deciding to purchase these securities. Also see “Risk Factors” on page 9 of this registration statement.**

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

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The date of this prospectus is           , 2022

**TABLE OF CONTENTS**

<a href="#">About This Prospectus</a>	1
<a href="#">Where You Can Find More Information</a>	3
<a href="#">Incorporation of Information By Reference</a>	4
<a href="#">Prospectus Summary</a>	5
<a href="#">Risk Factors</a>	9
<a href="#">Cautionary Note Regarding Forward-Looking Statements</a>	10
<a href="#">Use of Proceeds</a>	11
<a href="#">Description of Capital Stock</a>	12
<a href="#">Description of Debt Securities</a>	17
<a href="#">Description of Warrants</a>	27
<a href="#">Description of Subscription Rights</a>	30
<a href="#">Description of Units</a>	31
<a href="#">Plan of Distribution</a>	32
<a href="#">Legal Matters</a>	34
<a href="#">Experts</a>	34

## ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a “shelf” registration process. Under this shelf registration process, from time to time, we may sell any combination of the securities described in this prospectus in one or more offerings, up to a total dollar amount of \$100 million.

This prospectus provides you with a general description of the securities we may offer. Each time we offer our securities under this prospectus, we will provide a prospectus supplement that will contain more specific information about the terms of the offering. We may also add, update or change in a prospectus supplement any of the information contained in this prospectus or in documents we have incorporated by reference into this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement, you should rely on the information in the prospectus supplement; provided that, if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus or any prospectus supplement—the statement in the document having the later date modifies or supersedes the earlier statement. You should carefully read both this prospectus and the applicable prospectus supplement, together with the additional information described under the headings “Incorporation of Information by Reference” and “Where You Can Find More Information” before buying any of our securities in this offering.

The registration statement containing this prospectus, including the exhibits to the registration statement, provides additional information about us and the securities offered under this prospectus.

The exhibits to the registration statement contain the full text of certain contracts and other important documents we have summarized in this prospectus. You should review the full text of these documents because these summaries may not contain all the information that you may find important in deciding whether to purchase the securities we offer. You may obtain copies of these documents as described below under the heading “Where You Can Find More Information.”

**We have not authorized anyone to provide you with any additional information or any information that is different from that contained in or incorporated by reference into this prospectus, any accompanying prospectus supplement or any free writing prospectus provided in connection with an offering. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should not assume that the information contained in this prospectus is accurate as of any date other than that date, unless we otherwise note in this prospectus or any accompanying prospectus supplement.**

No dealer, salesperson or any other person is authorized to give any information or to make any representation other than the information and representations contained in or incorporated by reference into this prospectus or any applicable prospectus supplement.

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[Table of Contents](#)

If different information is given or different representations are made, you may not rely on that information or those representations as having been authorized by us. You may not imply from the delivery of this prospectus and any applicable prospectus supplement, nor from a sale made under this prospectus and any applicable prospectus supplement, that our affairs are unchanged since the date of this prospectus and any applicable prospectus supplement or that the information contained in any document incorporated by reference is accurate as of any date other than the date of the document incorporated by reference, regardless of the time of delivery of this prospectus and any applicable prospectus supplement or any sale of a security. This prospectus and any applicable prospectus supplement may only be used where it is legal to sell the securities.

**THIS PROSPECTUS MAY NOT BE USED TO OFFER AND SELL SECURITIES UNLESS IT IS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.**

Unless otherwise indicated or the context otherwise requires, the terms “HCW,” the “Company,” “we,” “us,” and “our” refer to HCW Biologics Inc., a Delaware corporation. This prospectus, the accompanying prospectus and the information incorporated by reference herein and therein may contain additional trade names, trademarks and service marks of other companies, which are the property of their respective owners. We do not intend our use or display of other companies’ trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, these other companies.



## WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities offered hereby. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement, the exhibits filed therewith or the documents incorporated by reference therein. For further information about us and the securities offered hereby, reference is made to the registration statement, the exhibits filed therewith and the documents incorporated by reference therein. Statements contained in this prospectus regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and in each instance, we refer you to the copy of such contract or other document filed as an exhibit to the registration statement.

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and are required to file annual, quarterly and other reports, proxy statements and other information with the SEC. The SEC maintains an Internet site (<http://www.sec.gov>) that contains reports, proxy and information statements, and various other information about us.

Information about us is also available at our website at <http://www.hcwbiologics.com>. This reference to our Internet address is for informational purposes only and shall not, under any circumstances, be deemed to incorporate the information available at or through such Internet address into this prospectus.

## INCORPORATION OF INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” information that we file with the SEC, which means that we can disclose important information to you by referring you to those other documents. The information incorporated by reference is an important part of this prospectus, and information we file later with the SEC will automatically update and supersede this information. A Current Report (or portion thereof) furnished, but not filed, on Form 8-K shall not be incorporated by reference into this prospectus. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14, or 15(d) of the Exchange Act prior to the termination of any offering of securities made by this prospectus:

- our [Annual Report on Form 10-K](#) for the fiscal year ended December 31, 2021, filed with the SEC on March 29, 2022;
- our Quarterly Reports on Form 10-Q for the quarters ended [March 31, 2022](#) and [June 30, 2022](#) and filed with the SEC on May 13, 2022 and August 12, 2022, respectively;
- our Current Reports on Form 8-K filed on [June 17, 2022](#) and [August 18, 2022](#);
- Our [Definitive Proxy Statement](#) on Schedule 14A, filed with the SEC on April 25, 2022 (but only with respect to information required by Part III of our Annual Report on Form 10-K for the year ended December 31, 2021, which information shall update and supersede information included in Part III of our Annual Report on Form 10-K for the year ended December 31, 2021);
- the description of our common stock contained in our registration statement on [Form 8-A](#) filed with the SEC on July 9, 2021, and any amendment or report updating that description, including the description contained in [Exhibit 4.2](#) to our Annual Report on Form 10-K for the fiscal year ended December 31, 2021; and
- future filings we make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act after the date of this prospectus and before the termination of the offering of the securities made under this prospectus.

We will furnish without charge to you, on written or oral request, a copy of any or all of such documents that has been incorporated herein by reference (other than exhibits to such documents unless such exhibits are specifically incorporated by reference into the documents that this prospectus incorporates). Written or oral requests for copies should be directed to HCW Biologics Inc., Attn: Corporate Secretary, 2929 N Commerce Parkway, Miramar, FL 33025, and our telephone number is (954) 842-2024. See the section of this prospectus entitled “Where You Can Find More Information” for information concerning how to obtain copies of materials that we file with the SEC.

## PROSPECTUS SUMMARY

*This summary highlights information contained in other parts of this prospectus or incorporated by reference in this prospectus from our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2022, and our other filings with the SEC listed below under the heading “Incorporation of Information by Reference.” This summary may not contain all the information that you should consider before investing in securities. You should read the entire prospectus and the information incorporated by reference in this prospectus carefully, including “Risk Factors” and the financial data and related notes and other information incorporated by reference, before making an investment decision. See “Cautionary Note Regarding Forward-Looking Statements.”*

### Overview

We are a biopharmaceutical company focused on discovering and developing novel immunotherapies to lengthen health span by disrupting the link between chronic, low-grade inflammation and age-related diseases. We believe age-related, chronic, low-grade inflammation, or “inflammaging,” is a significant contributing factor to several diseases and conditions, such as cancer, cardiovascular disease, diabetes, neurodegenerative diseases, and autoimmune diseases. The induction and retention of low-grade inflammation in an aging human body is mainly the result of the accumulation of non-proliferative senescent cells and persistent activation of protein complexes, known as inflammasomes, in innate immune cells. These two elements share common mechanisms in promoting secretion of proinflammatory proteins and in many cases interact to drive inflammaging. Our novel approach is to treat both of these elements. We believe our approach has the potential to fundamentally change the treatment of age-related diseases.

We have combined our deep understanding of disease-related immunology with our expertise in advanced protein engineering to develop our TOBI™ (Tissue factOr-Based fusIon) discovery platform for the design of category-defining immunotherapeutic drugs. This modular and tunable technology has allowed us to generate a novel pipeline of internally-developed product candidates capable of activating and targeting desired immune responses and blocking unwanted immunosuppressive activities. Using our TOBI™ platform, we have successfully developed over 30 molecules that can be administered by subcutaneous injection as well as used in adoptive cell therapy approaches. Our focus is to develop immunotherapeutic therapies administered by subcutaneous injection, and we intend to out-license cell therapy based approaches. We have selected two molecules as our lead product candidates: HCW9218 and HCW9302. We have chosen these product candidates because we believe they have the potential to become transformative immunotherapeutics for the treatment of a broad range of age-related diseases, and both can be administered to patients by subcutaneous injection.

In response to physiological or environmental stress, normal tissue cells enter a senescent state of irreversible growth arrest accompanied by the release of Senescence-Associated Secretory Phenotype (“SASP”) factors. SASP factors, including proinflammatory cytokines, chemokines, and proteinases, drive the inflammation cycle,

including activation of inflammasomes. As our body ages, senescent cells accumulate and increase the release of SASP factors leading to chronic, low-grade inflammation, and organ/tissue damage. Studies have shown that strategies to reduce or eliminate senescent cells can delay, prevent, and improve age-related dysfunctions, including cancer.

The bifunctionality of HCW9218 allows it to function as both a senolytic and senomorphic immunotherapeutic. HCW9218 is designed to treat the impact of accumulated senescent cells and the SASP factors which they secrete by eliminating senescent cells (i.e., senolytic effect) and reducing SASP factors (i.e., senomorphic effect). This molecule is a heterodimeric, bifunctional fusion protein complex comprising extracellular domains of the human transforming growth factor- $\beta$  (“TGF- $\beta$ ”) receptor II, as a TGF- $\beta$  trap for TGF- $\beta$  neutralization, and a human interleukin (“IL”)-15/IL-15 receptor  $\beta$  complex for immune cell stimulation. Together, the activities of these domains drive senescent cell clearance and SASP factor neutralization. The Company published a paper authored by our scientific research team in the peer-reviewed journal, *Molecular Therapy*, entitled, “Bifunctional TGF- $\beta$  trap/IL-15 Protein Complex Elicits Potent NK Cell and CD8+ T Cell Immunity Against Solid Tumors.” The paper highlights preclinical data from in vivo studies demonstrating the potential of HCW9218 as a novel immunostimulant with the ability to simultaneously lessen immunosuppression in patients with cancer.

As the first line of defense to infections or tissue injuries, the innate immune system activates inflammasomes to initiate protective immune responses. Similar to senescent cells, activated inflammasomes promote the release of proinflammatory factors. Unresolved activation of inflammasomes due to chronic infection or persistent tissue injury leads to chronic low-grade inflammation which perpetuates this cycle.

HCW9302 is designed to activate and expand regulatory T (“Treg”) cells to suppress the activity of inflammasome-bearing cells and the inflammatory factors which they secrete. This molecule is a single-chain, IL-2-based fusion protein. Inflammasomes are expressed in innate immune cells. When these cells are stimulated by various signals, the inflammasomes become active and the cells release inflammatory factors. In certain conditions, these signaling pathways persist leading to chronic inflammatory responses and associated tissue destruction. Preclinical studies in mouse models have demonstrated the ability of HCW9302 to activate Treg cells and reduce inflammation-related diseases, supporting the potential of HCW9302 to treat a wide variety of autoimmune and age-related diseases.

To date, there has been limited clinical success in targeting senescent cell accumulation or aberrant inflammasome activity using small molecule-based approaches. Studies have found the immune cell activity in young individuals is capable of limiting these processes, which we believe indicates that immunotherapeutic approaches that combine relevant stimulatory and inhibitory components may provide a means of treating age-related diseases by addressing chronic inflammation.

### **Corporate Information**

We were incorporated in Delaware on April 2, 2018. Our principal executive offices are located at 2929 N Commerce Parkway, Miramar, FL 33025. Our telephone number at that location is (954) 842-2024. Our corporate website address is [www.hcwbiologics.com](http://www.hcwbiologics.com). Information contained on our website is not a part of this prospectus and the inclusion of our website address in this prospectus is an inactive textual reference only.

### **The Securities We May Offer**

With this prospectus, we may offer common stock, preferred stock, debt securities, warrants to purchase our common stock, preferred stock or debt securities, subscription rights to purchase our common stock, preferred stock or debt securities, and/or units consisting of some or all of these securities in any combination. The aggregate offering price of securities that we offer with this prospectus will not exceed \$100 million. Each time we offer securities with this prospectus, we will provide offerees with a prospectus supplement that will contain the specific terms of the securities being offered. The following is a summary of the securities we may offer with this prospectus.

#### ***Common Stock***

We may offer shares of our common stock, par value \$0.0001 per share.

#### ***Preferred Stock***

We may offer shares of our preferred stock, par value \$0.0001 per share, in one or more series. Our board of directors or a committee designated by the board will determine the dividend, voting, conversion and other rights of the series of shares of preferred stock being offered. Each series of preferred stock will be more fully described in the particular prospectus supplement that will accompany this prospectus, including redemption provisions, rights in the event of our liquidation, dissolution or the winding up, voting rights and rights to convert into common stock.

#### ***Debt Securities***

We may offer general obligations, which may be secured or unsecured, senior or subordinated and convertible into shares of our common stock or preferred stock. In this prospectus, we refer to the senior debt securities and the subordinated debt securities together as the “debt securities.” Our board of directors will determine the terms of each series of debt securities being offered.

We will issue the debt securities under an indenture between us and a trustee. In this document, we have summarized general features of the debt securities from the indenture. We encourage you to read the form of indenture, which is an exhibit to the registration statement of which this prospectus is a part.

***Warrants***

We may offer warrants for the purchase of debt securities, shares of preferred stock or shares of common stock. We may issue warrants independently or together with other securities. Our board of directors will determine the terms of the warrants.

***Subscription Rights***

We may offer subscription rights for the purchase of common stock, preferred stock or debt securities. We may issue subscription rights independently or together with other securities. Our board of directors will determine the terms of the subscription rights.

***Units***

We may offer units consisting of some or all of the securities described above, in any combination, including common stock, preferred stock, warrants and/or debt securities. The terms of these units will be set forth in a prospectus supplement. The description of the terms of these units in the related prospectus supplement will not be complete. You should refer to the applicable form of unit and unit agreement for complete information with respect to these units.

## **RISK FACTORS**

An investment in our securities involves a high degree of risk. The prospectus supplement applicable to each offering of securities will contain a discussion of the risks applicable to an investment in our securities. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading “Risk Factors” in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under Part II, Item 1A, “Risk Factors,” in our most recent Quarterly Report on Form 10-Q, which is incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future and which are incorporated herein by reference. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and documents incorporated herein by reference contain “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts contained or incorporated herein by reference are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplate,” “believe,” “estimate,” “predict,” “potential” or “continue” or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. All statements other than statements of historical fact contained or incorporated herein by reference, including without limitation statements regarding our future results of operations and financial position, business strategy, market size, potential growth opportunities, nonclinical and clinical development activities, efficacy and safety profile of our product candidates, potential therapeutic benefits and economic value of our product candidates, the timing and results of nonclinical studies and clinical trials, collaboration with third parties and the receipt and timing of potential regulatory designations, approvals and commercialization of product candidates, are forward-looking statements. We intend that such forward-looking statements be subject to the safe harbors created thereby.

These forward-looking statements are based on the current beliefs and expectations of our management and are subject to significant risks and uncertainties. If underlying assumptions prove inaccurate or unknown risks or uncertainties materialize, actual results may differ materially from current expectations and projections. Factors that might cause such a difference include those discussed in Part I, Item 1A, “Risk Factors” in our most recent Annual Report on Form 10-K and in any subsequent Quarterly Report on Form 10-Q, as well as those discussed in this prospectus, the documents incorporated by reference into this prospectus and any free writing prospectus. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this prospectus or, in the case of documents referred to or incorporated by reference, the date of those documents.

All subsequent written or oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to release publicly any revisions to these forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events, except as may be required under applicable U.S. securities law. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements.



## **USE OF PROCEEDS**

We will retain broad discretion over the use of the net proceeds to us from the sale of our securities under this prospectus. Unless otherwise provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of securities under this prospectus for general corporate purposes, which may include funding research, clinical development, process development and manufacturing of our product candidates, increasing our working capital, reducing indebtedness, acquisitions or investments in businesses, products or technologies that are complementary to our own and capital expenditures. We will set forth in the applicable prospectus supplement our intended use for the net proceeds received from the sale of any securities. Pending the application of the net proceeds, we intend to invest the net proceeds in short-term or long-term, investment-grade, interest-bearing securities.

## DESCRIPTION OF CAPITAL STOCK

The following description summarizes the most important terms of our capital stock. Because it is only a summary, it does not contain all the information that may be important to you. For a complete description, you should refer to our restated certificate of incorporation and restated bylaws, which are included as exhibits to the registration statement of which this prospectus forms a part, and to the applicable provisions of Delaware law.

### General

Our authorized capital stock consists of 250,000,000 shares of common stock, par value \$0.0001 per share, and 10,000,000 shares of redeemable preferred stock, par value \$0.0001 per share.

### Common Stock

#### *Voting Rights*

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Our certificate of incorporation and bylaws do not provide for cumulative voting rights. Because of this, the holders of a plurality of the shares of common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they should so choose. With respect to matters other than the election of directors, at any meeting of the stockholders at which a quorum is present or represented, the affirmative vote of a majority of the voting power of the shares present in person or represented by proxy at such meeting and entitled to vote on the subject matter shall be the act of the stockholders, except as otherwise required by law. The holders of a majority of the stock issued and outstanding and entitled to vote, present in person or represented by proxy, shall constitute a quorum for the transaction of business at all meetings of the stockholders.

#### *Dividends*

Subject to preferences that may be applicable to any then outstanding redeemable preferred stock, holders of common stock are entitled to receive dividends, if any, as may be declared from time to time by the board of directors out of legally available funds.

#### *Liquidation*

In the event of our liquidation, dissolution or winding up, holders of common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of redeemable preferred stock.

## [Table of Contents](#)

### *Rights and Preferences*

Holders of common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to the common stock. The rights, preferences and privileges of the holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of redeemable preferred stock that we may designate in the future.

### *Fully Paid and Nonassessable*

All of our outstanding shares of common stock are fully paid and nonassessable.

### **Preferred Stock**

No shares of our preferred stock are outstanding. Our board of directors has the authority, without further action by the stockholders, to issue up to 10,000,000 shares of redeemable preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences, and privileges could include dividend rights, conversion rights, voting rights, redemption rights, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of redeemable preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of redeemable preferred stock could have the effect of delaying, deferring or preventing change in our control or other corporate action. We have no present plan to issue any shares of redeemable preferred stock.

### **Anti-Takeover Effects of Delaware Law and Our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws**

Certain provisions of our restated certificate of incorporation, restated bylaws and Delaware law, which are summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate more favorable terms with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us.

### *Undesignated Preferred Stock*

As discussed above, our board of directors has the ability to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

## [Table of Contents](#)

### *Limits on Ability of Stockholders to Act by Written Consent or Call a Special Meeting*

Our amended and restated certificate of incorporation provides that our stockholders may not act by written consent, which may lengthen the amount of time required to take stockholder actions. As a result, a holder controlling a majority of our capital stock would not be able to amend our bylaws or remove directors without holding a meeting of our stockholders called in accordance with our bylaws.

In addition, our amended and restated bylaws provides that special meetings of the stockholders may be called only by the chairperson of the board, the Chief Executive Officer or our board of directors. Stockholders may not call a special meeting, which may delay the ability of our stockholders to force consideration of a proposal or for holders controlling a majority of our capital stock to take any action, including the removal of directors.

### *Requirements for Advance Notification of Stockholder Nominations and Proposals*

Our amended and restated bylaws establishes advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of our board of directors or a committee of our board of directors. These provisions may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.

### *Board Classification*

Our board of directors is divided into three classes, one class of which is elected each year by our stockholders. The directors in each class will serve three-year terms. A third party may be discouraged from making a tender offer or otherwise attempting to obtain control of us as it is more difficult and time-consuming for stockholders to replace a majority of the directors on a classified board.

### *No Cumulative Voting*

Our amended and restated certificate of incorporation and amended and restated bylaws do not permit cumulative voting in the election of directors. Cumulative voting allows a stockholder to vote a portion or all of its shares for one or more candidates for seats on the board of directors. Without cumulative voting, a minority stockholder may not be able to gain as many seats on our board of directors as the stockholder would be able to gain if cumulative voting were permitted. The absence of cumulative voting makes it more difficult for a minority stockholder to gain a seat on our board of directors to influence our board's decision regarding a takeover.

## [Table of Contents](#)

### *Amendment of Charter and Bylaws Provisions*

The amendment of the above provisions of our amended and restated certificate of incorporation will require approval by holders of at least two-thirds of our outstanding capital stock entitled to vote generally in the election of directors. The amendment of our bylaws will require approval by the holders of at least two-thirds of our outstanding capital stock entitled to vote generally in the election of directors.

### *Choice of Forum*

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law: (1) any derivative action or proceeding brought on our behalf; (2) any action asserting a claim of breach of a fiduciary duty or other wrongdoing by any of our directors, officers, or employees to us or our stockholders; (3) any action asserting a claim against us or our stockholders arising pursuant to any provision of the General Corporation Law of the State of Delaware or our certificate of incorporation or bylaws; (4) any action to interpret, apply, enforce, or determine the validity of our certificate of incorporation or bylaws; (5) any action as to which the Delaware General Corporation Law confers jurisdiction to the Court of Chancery of the State of Delaware; or (6) any action asserting a claim governed by the internal affairs doctrine. The provisions would not apply to suits brought to enforce a duty or liability created by the Securities Act of 1933, as amended (the "Securities Act"), the Exchange Act, or any other claim for which the U.S. federal courts have exclusive jurisdiction. Furthermore, Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated certificate of incorporation provides that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act.

While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions. In such instance, we would expect to vigorously assert the validity and enforceability of the exclusive forum provisions of our amended and restated certificate of incorporation. This may require significant additional costs associated with resolving such action in other jurisdictions and there can be no assurance that the provisions will be enforced by a court in those other jurisdictions.

### *Delaware Anti-Takeover Statute*

## [Table of Contents](#)

We are subject to the provisions of Section 203 of the DGCL regulating corporate takeovers. In general, Section 203 prohibits a publicly held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, our board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, calculated as provided under Section 203; or
- at or subsequent to the date of the transaction, the business combination is approved by our board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, did own 15% or more of a corporation's outstanding voting stock. We expect the existence of this provision to have an anti-takeover effect with respect to transactions our board of directors does not approve in advance. We anticipate that Section 203 may also discourage attempts that might result in a premium over the market price for the shares of common stock held by stockholders.

The provisions of Delaware law and the provisions of our amended and restated certificate of incorporation and amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they might also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions might also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders might otherwise deem to be in their best interests.

### **Transfer Agent and Registrar**

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company LLC. The transfer agent and registrar's address is 6201 15th Avenue, Brooklyn, NY 11219, and its telephone number is (718) 921-8124.

### **Nasdaq Global Select Market Listing**

Our common stock is listed on the Nasdaq Global Market under the symbol "HCWB".

## DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of the debt securities that we may offer under this prospectus. While the terms we have summarized below will apply generally to any future debt securities we may offer under this prospectus, we will describe the particular terms of any debt securities that we may offer in more detail in the applicable prospectus supplement. The terms of any debt securities we offer under a prospectus supplement may differ from the terms we describe below.

The following summary description, together with the additional information we may include in any applicable prospectus supplements, does not purport to be complete and is subject to, and qualified in its entirety by reference to, the form of indenture filed as an exhibit to the registration statement of which this prospectus is a part, as it may be supplemented, amended or modified from time to time, as well as the notes and supplemental agreements relating to each series of debt securities that will be incorporated by reference as exhibits to the registration statement that includes this prospectus or as exhibits to a current report on Form 8-K if we offer debt securities.

We will issue senior debt securities under one or more senior indentures that we will enter into with a trustee named in the relevant senior indenture. We will issue subordinated debt securities under one or more subordinated indentures that we will enter into with a trustee named in the relevant subordinated indenture. We have filed a form of indenture as an exhibit to the registration statement of which this prospectus is a part. We use the terms “indenture” and “indentures” in this prospectus to refer to both the senior indenture and the subordinated indenture.

The indentures will be qualified under the Trust Indenture Act of 1939, as amended. We use the term “trustee” to refer to either the trustee under the senior indenture or the trustee under the subordinated indenture, as applicable.

The following summaries of material provisions of the senior debt securities, the subordinated debt securities and the indentures are subject to, and qualified in their entirety by reference to, all the provisions of the indenture applicable to a particular series of debt securities. We urge you to read the applicable prospectus supplements related to the debt securities that we sell under this prospectus, as well as the indenture that would contain the terms of the debt securities. Except as we may otherwise indicate, the terms of the senior indenture and the subordinated indenture would be identical.

### General

We may issue the debt securities offered by this prospectus and any accompanying prospectus supplement under an indenture to be entered into between us and the trustee identified in the applicable prospectus supplement. The terms of the debt securities will include those stated in the indenture and those made part of the indenture by reference to the Trust Indenture Act of 1939, as in effect on the date of the indenture. We have filed

## Table of Contents

a copy of the form of indenture as an exhibit to the registration statement in which this prospectus is included. The indenture will be subject to and governed by the terms of the Trust Indenture Act of 1939. We may offer under this prospectus up to an aggregate principal amount of \$100.0 million in debt securities, or if debt securities are issued at a discount, or in a foreign currency, foreign currency units or composite currency, the principal amount as may be sold for an aggregate public offering price of up to \$100.0 million. Unless otherwise specified in the applicable prospectus supplement, the debt securities will represent our direct, unsecured obligations and will rank equally with all of our other unsecured indebtedness.

We may issue the debt securities in one or more series with the same or various maturities, at par, at a premium, or at a discount. We will describe the particular terms of each series of debt securities in a prospectus supplement relating to that series, which we will file with the SEC. The prospectus supplement relating to the particular series of debt securities being offered will specify the particular amounts, prices and terms of those debt securities. These terms may include:

- the title of the series;
- the aggregate principal amount, and, if a series, the total amount authorized and the total amount outstanding;
- the issue price or prices, expressed as a percentage of the aggregate principal amount of the debt securities;
- any limit on the aggregate principal amount;
- the date or dates on which principal is payable;
- the interest rate or rates (which may be fixed or variable) or, if applicable, the method used to determine such rate or rates;
- the date or dates from which interest, if any, will be payable and any regular record date for the interest payable;
- the place or places where principal and, if applicable, premium and interest, is payable;
- the terms and conditions upon which we may, or the holders may require us to, redeem or repurchase the debt securities;
- the denominations in which such debt securities may be issuable, if other than denominations of \$1,000 or any integral multiple of that number;
- whether the debt securities are to be issuable in the form of certificated securities (as described below) or global securities (as described below);



## Table of Contents

- the portion of principal amount that will be payable upon declaration of acceleration of the maturity date if other than the principal amount of the debt securities;
- the currency of denomination;
- the designation of the currency, currencies or currency units in which payment of principal and, if applicable, premium and interest, will be made;
- if payments of principal and, if applicable, premium or interest, on the debt securities are to be made in one or more currencies or currency units other than the currency of denomination, the manner in which the exchange rate with respect to such payments will be determined;
- if amounts of principal and, if applicable, premium and interest may be determined by reference to an index based on a currency or currencies or by reference to a commodity, commodity index, stock exchange index or financial index, then the manner in which such amounts will be determined;
- the provisions, if any, relating to any collateral provided for such debt securities;
- any addition to or change in the covenants and/or the acceleration provisions described in this prospectus or in the indenture;
- any events of default, if not otherwise described below under “Events of Default”;
- the terms and conditions, if any, for conversion into or exchange for shares of our common stock or preferred stock;
- any depositaries, interest rate calculation agents, exchange rate calculation agents or other agents; and
- the terms and conditions, if any, upon which the debt securities shall be subordinated in right of payment to our other indebtedness.

We may issue discount debt securities that provide for an amount less than the stated principal amount to be due and payable upon acceleration of the maturity of such debt securities in accordance with the terms of the indenture. We may also issue debt securities in bearer form, with or without coupons. If we issue discount debt securities or debt securities in bearer form, we will describe material U.S. federal income tax considerations and other material special considerations which apply to these debt securities in the applicable prospectus supplement.

We may issue debt securities denominated in or payable in a foreign currency or currencies or a foreign currency unit or units. If we do, we will describe the restrictions, elections, and general tax considerations relating to the debt securities and the foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

## [Table of Contents](#)

Debt securities offered under this prospectus and any prospectus supplement will be subordinated in right of payment to certain of our outstanding senior indebtedness. In addition, we will seek the consent of the holders of any such senior indebtedness prior to issuing any debt securities under this prospectus to the extent required by the agreements evidencing such senior indebtedness.

### **Conversion or Exchange Rights**

We will set forth in the prospectus supplement the terms on which a series of debt securities may be convertible into or exchangeable for our common stock or our other securities. We will include provisions as to whether conversion or exchange is mandatory, at the option of the holder or at our option. We may include provisions pursuant to which the number of shares of our common stock or our other securities that the holders of the series of debt securities receive would be subject to adjustment.

### **Consolidation, Merger or Sale**

Any successor to or acquiror of the indentures must assume all of our obligations under the indentures or the debt securities, as appropriate. If the debt securities are convertible for our other securities or securities of other entities, the person with whom we consolidate or merge or to whom we sell all of our property must make provisions for the conversion of the debt securities into securities that the holders of the debt securities would have received if they had converted the debt securities before the consolidation, merger or sale.

### **Events of Default**

Unless otherwise provided in any applicable prospectus supplement, documents incorporated by reference or free writing prospectus, the following will be events of default under the indenture with respect to each series of debt securities issued thereunder:

- a) if we fail to pay interest when due and payable and our failure continues for 30 days, or within such other time period as may be specified in the applicable indenture, and the time for payment has not been extended or deferred;
- b) if we fail to pay the principal, premium or sinking fund payment, if any, when due and payable and the time for payment has not been extended or delayed;
- c) if specified events of bankruptcy, insolvency or reorganization occur; and
- d) if we fail to observe or perform any other covenant contained in the debt securities or the indentures, other than a covenant specifically relating to another series of debt securities, and our failure continues for 60 days, or within such other time period as may be specified in the applicable indenture, after we receive notice from the trustee or holders of at least a majority in principal amount of the outstanding debt securities of an affected series, or such other percentage as may be specified in the applicable indenture, in aggregate principal amount of the outstanding debt securities of the applicable series.

## Table of Contents

If an event of default with respect to debt securities of any series occurs and is continuing, other than an event of default specified in the last bullet point above, the trustee or the holders of at least 25%, or such other percentage as may be specified in the applicable indenture, in aggregate principal amount of the outstanding debt securities of that series, by notice to us in writing, and to the trustee if notice is given by such holders, may declare the unpaid principal of, premium, if any, and accrued interest, if any, due and payable immediately. If an event of default specified in the last bullet point above occurs with respect to us, the principal amount of and accrued interest, if any, of each issue of debt securities then outstanding shall be due and payable without any notice or other action on the part of the trustee or any holder.

The holders of a majority in principal amount of the outstanding debt securities of an affected series may waive any default or event of default with respect to the series and its consequences, except defaults or events of default regarding payment of principal, premium, if any, or interest, unless we have cured the default or event of default in accordance with the indenture. Any waiver shall cure the default or event of default.

Subject to the terms of the indentures, if an event of default under an indenture shall occur and be continuing, the trustee will be under no obligation to exercise any of its rights or powers under such indenture at the request or direction of any of the holders of the applicable series of debt securities, unless such holders have offered the trustee reasonable indemnity. The holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, or exercising any trust or power conferred on the trustee, with respect to the debt securities of that series, provided that:

- the direction so given by the holder is not in conflict with any law or the applicable indenture; and
- subject to its duties under the Trust Indenture Act of 1939, the trustee need not take any action that might involve it in personal liability or might be unduly prejudicial to the holders not involved in the proceeding.

A holder of the debt securities of any series will only have the right to institute a proceeding under the indentures or to appoint a receiver or trustee, or to seek other remedies if:

- the holder has given written notice to the trustee of a continuing event of default with respect to that series;
- the holders of at least 25% (or, in the case of a default of the type described under subsection (d), above, a majority in principal amount of the outstanding debt securities of an affected series), or such other percentage as may be specified in the applicable indenture, in aggregate principal amount of the outstanding debt securities of that series have made written request, and such holders have offered reasonable indemnity to the trustee to institute the proceeding as trustee; and

## Table of Contents

- the trustee does not institute the proceeding, and does not receive from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series other conflicting directions within 60 days, or within such other time period as may be specified in the applicable indenture, after the notice, request and offer of indemnity.

These limitations do not apply to a suit instituted by a holder of debt securities if we default in the payment of the principal, premium, if any, or interest on, the debt securities.

We will periodically file statements with the trustee regarding our compliance with specified covenants in the indentures.

### **Modification and Waiver**

We and the trustee may change an indenture without the consent of any holders with respect to specific matters:

- to evidence the succession of another corporation to us and the assumption by any such successor of our covenants in such indenture and in the debt securities issued thereunder;
- to add to our covenants or to surrender any right or power conferred on us pursuant to the indenture;
- to establish the form and terms of debt securities issued thereunder;
- to evidence and provide for a successor trustee under such indenture with respect to one or more series of debt securities issued thereunder or to provide for or facilitate the administration of the trusts under such indenture by more than one trustee;
- to cure any ambiguity, to correct or supplement any provision in the indenture that may be defective or inconsistent with any other provision of the indenture or to make any other provisions with respect to matters or questions arising under such indenture; provided that no such action adversely affects the interests of the holders of any series of debt securities issued thereunder in any material respect;
- to add to, delete from or revise the conditions, limitations and restrictions on the authorized amount, terms or purposes of issue, authentication and delivery of securities under the indenture;
- to add any additional events of default with respect to all or any series of debt securities;

## Table of Contents

- to supplement any of the provisions of the indenture as may be necessary to permit or facilitate the defeasance and discharge of any series of debt securities, provided that such action does not adversely affect the interests of any holder of an outstanding debt security of such series or any other security in any material respect;
- to make provisions with respect to the conversion or exchange rights of holders of debt securities of any series;
- to pledge to the trustee as security for the debt securities of any series any property or assets;
- to add guarantees in respect of the debt securities of one or more series;
- to change or eliminate any of the provisions of the indenture, provided that any such change or elimination becomes effective only when there is no security of any series outstanding created prior to the execution of such supplemental indenture which is entitled to the benefit of such provision;
- to provide for certificated securities in addition to or in place of global securities;
- to qualify such indenture under the Trust Indenture Act of 1939, as amended;
- with respect to the debt securities of any series, to conform the text of the indenture or the debt securities of such series to any provision of the description thereof in our offering memorandum or prospectus relating to the initial offering of such debt securities, to the extent that such provision, in our good faith judgment, was intended to be a verbatim recitation of a provision of the indenture or such securities; or
- to make any other change that does not adversely affect the rights of holders of any series of debt securities issued thereunder in any material respect.

In addition, under the indentures, the rights of holders of a series of debt securities may be changed by us and the trustee with the written consent of the holders of at least a majority in aggregate principal amount of the outstanding debt securities of each series that is affected. However, we and the trustee may only make the following changes with the consent of each holder of any outstanding debt securities affected:

## Table of Contents

- extending the fixed maturity of the series of debt securities;
- reducing the principal amount, reducing the rate of or extending the time of payment of interest, or reducing any premium payable upon the redemption of any debt securities;
- reducing the percentage of debt securities, the holders of which are required to consent to any amendment, supplement, modification or waiver; or
- make any change that adversely affects the right to convert or exchange any security into or for common stock or other securities, cash or other property in accordance with the terms of the applicable debt security.

Each indenture provides that we can elect to be discharged from our obligations with respect to one or more series of debt securities, except for specified obligations, including obligations to:

- register the transfer or exchange of debt securities of the series;
- replace stolen, lost or mutilated debt securities of the series;
- maintain paying agencies;
- hold monies for payment in trust;
- recover excess money held by the trustee;
- compensate and indemnify the trustee; and
- appoint any successor trustee.

In order to exercise our rights to be discharged, we must deposit with the trustee money or government obligations sufficient to pay all the principal of, any premium, if any, and interest on, the debt securities of the series on the dates payments are due.

### **Form, Exchange and Transfer**

We will issue the debt securities of each series only in fully registered form without coupons and, unless we otherwise specify in the applicable prospectus supplement, in denominations of \$1,000 and any integral multiple thereof. The indentures provide that we may issue debt securities of a series in temporary or permanent global form and as book-entry securities that will be deposited with, or on behalf of, The Depository Trust Company or another depository named by us and identified in a prospectus supplement with respect to that series.

At the option of the holder, subject to the terms of the indentures and the limitations applicable to global securities described in the applicable prospectus supplement, the holder of the debt securities of any series can exchange the debt securities for other debt securities of the same series, in any authorized denomination and of like tenor and aggregate principal amount.

## [Table of Contents](#)

Subject to the terms of the indentures and the limitations applicable to global securities set forth in the applicable prospectus supplement, holders of the debt securities may present the debt securities for exchange or for registration of transfer, duly endorsed or with the form of transfer endorsed thereon duly executed if so required by us or the security registrar, at the office of the security registrar or at the office of any transfer agent designated by us for this purpose. Unless otherwise provided in the debt securities that the holder presents for transfer or exchange, we will make no service charge for any registration of transfer or exchange, but we may require payment of any taxes or other governmental charges.

We will name in the applicable prospectus supplement the security registrar, and any transfer agent in addition to the security registrar, that we initially designate for any debt securities. We may at any time designate additional transfer agents or rescind the designation of any transfer agent or approve a change in the office through which any transfer agent acts, except that we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

If we elect to redeem the debt securities of any series, we will not be required to:

- issue, register the transfer of, or exchange any debt securities of that series during a period beginning at the opening of business 15 days, or within such other time period as may be specified in the applicable indenture, before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

### **Repurchases on the Open Market**

We, or an affiliate of ours, may at any time or from time to time repurchase any debt security in the open market or otherwise. Such debt securities may, at our option (or our affiliate's option), be held, resold or surrendered to the trustee for cancellation.

### **Information Concerning the Trustee**

The trustee, other than during the occurrence and continuance of an event of default under an indenture, undertakes to perform only those duties as are specifically set forth in the applicable indenture. Upon an event of default under an indenture, the trustee must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. Subject to this provision, the trustee is under no obligation to exercise any of the powers given him or her by the indentures at the request of any holder of debt securities unless he or she is offered reasonable security and indemnity against the costs, expenses and liabilities that he or she might incur.

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## [Table of Contents](#)

### **Payment and Paying Agents**

Unless we otherwise indicate in the applicable prospectus supplement, we will make payment of the interest on any debt securities on any interest payment date to the person in whose name the debt securities, or one or more predecessor securities, are registered at the close of business on the regular record date for the interest.

We will pay principal of and any premium and interest on the debt securities of a particular series at the office of the paying agents designated by us, except that unless we otherwise indicate in the applicable prospectus supplement, we will make interest payments by check that we will mail to the holder or by wire transfer to certain holders. Unless we otherwise indicate in a prospectus supplement, we will designate the corporate trust office of the trustee in the City of New York as our sole paying agent for payments with respect to debt securities of each series. We will name in the applicable prospectus supplement any other paying agents that we initially designate for the debt securities of a particular series. We will maintain a paying agent in each place of payment for the debt securities of a particular series.

All money we pay to a paying agent or the trustee for the payment of the principal of or any premium or interest on any debt securities that remains unclaimed at the end of two years after such principal, premium or interest has become due and payable will be repaid to us, and the holder of the debt security thereafter may look only to us for payment thereof.

### **Governing Law**

The indentures and the debt securities will be governed by and construed in accordance with the laws of the State of New York, except to the extent that the Trust Indenture Act of 1939 is applicable.



## DESCRIPTION OF WARRANTS

### General

We may issue warrants for the purchase of our debt securities, preferred stock, common stock, or any combination thereof. Warrants may be issued independently or together with our debt securities, preferred stock or common stock and may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and a bank or trust company, as warrant agent. The warrant agent will act solely as our agent in connection with the warrants. The warrant agent will not have any obligation or relationship of agency or trust for or with any holders or beneficial owners of warrants. This summary of certain provisions of the warrants is not complete. For the terms of a particular series of warrants, you should refer to the prospectus supplement for that series of warrants and the warrant agreement for that particular series.

### Debt Warrants

The prospectus supplement relating to a particular issue of warrants to purchase debt securities will describe the terms of the debt warrants, including the following:

- the title of the debt warrants;
- the offering price for the debt warrants, if any;
- the aggregate number of the debt warrants;
- the designation and terms of the debt securities, including any conversion rights, purchasable upon exercise of the debt warrants;
- if applicable, the date from and after which the debt warrants and any debt securities issued with them will be separately transferable;
- the principal amount of debt securities that may be purchased upon exercise of a debt warrant and the exercise price for the warrants, which may be payable in cash, securities or other property;
- the dates on which the right to exercise the debt warrants will commence and expire;
- if applicable, the minimum or maximum amount of the debt warrants that may be exercised at any one time;
- whether the debt warrants represented by the debt warrant certificates or debt securities that may be issued upon exercise of the debt warrants will be issued in registered or bearer form;
- information with respect to book-entry procedures, if any;

## Table of Contents

- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- if applicable, a discussion of material U.S. federal income tax considerations;
- the antidilution provisions of the debt warrants, if any;
- the redemption or call provisions, if any, applicable to the debt warrants;
- any provisions with respect to the holder's right to require us to repurchase the debt warrants upon a change in control or similar event; and
- any additional terms of the debt warrants, including procedures and limitations relating to the exchange, exercise, and settlement of the debt warrants.

Debt warrant certificates will be exchangeable for new debt warrant certificates of different denominations. Debt warrants may be exercised at the corporate trust office of the warrant agent or any other office indicated in the prospectus supplement. Prior to the exercise of their debt warrants, holders of debt warrants will not have any of the rights of holders of the debt securities purchasable upon exercise and will not be entitled to payment of principal or any premium, if any, or interest on the debt securities purchasable upon exercise.

### **Equity Warrants**

The prospectus supplement relating to a particular series of warrants to purchase our common stock or preferred stock will describe the terms of the warrants, including the following:

- the title of the warrants;
- the offering price for the warrants, if any;
- the aggregate number of warrants;
- the designation and terms of the common stock or preferred stock that may be purchased upon exercise of the warrants;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each security;
- if applicable, the date from and after which the warrants and any securities issued with the warrants will be separately transferable;
- the number of shares of common stock or preferred stock that may be purchased upon exercise of a warrant and the exercise price for the warrants;

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## Table of Contents

- the dates on which the right to exercise the warrants shall commence and expire;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- if applicable, a discussion of material U.S. federal income tax considerations;
- the antidilution provisions of the warrants, if any;
- the redemption or call provisions, if any, applicable to the warrants;
- any provisions with respect to a holder's right to require us to repurchase the warrants upon a change in control or similar event; and
- any additional terms of the warrants, including procedures and limitations relating to the exchange, exercise and settlement of the warrants.

Holders of equity warrants will not be entitled:

- to vote, consent, or receive dividends;
- receive notice as stockholders with respect to any meeting of stockholders for the election of our directors or any other matter; or
- exercise any rights as stockholders.

## DESCRIPTION OF SUBSCRIPTION RIGHTS

We may issue subscription rights to purchase our common stock, preferred stock or debt securities. These subscription rights may be offered independently or together with any other security offered hereby and may or may not be transferable by the stockholder receiving the subscription rights in such offering. In connection with any offering of subscription rights, we may enter into a standby arrangement with one or more underwriters or other purchasers pursuant to which the underwriters or other purchasers may be required to purchase any securities remaining unsubscribed for after such offering.

The prospectus supplement relating to any subscription rights we offer, if any, will, to the extent applicable, include specific terms relating to the offering, including some or all of the following:

- the price, if any, for the subscription rights;
- the exercise price payable for our common stock, preferred stock or debt securities upon the exercise of the subscription rights;
- the number of subscription rights to be issued to each stockholder;
- the number and terms of our common stock, preferred stock or debt securities which may be purchased per each subscription right;
- the extent to which the subscription rights are transferable;
- any other terms of the subscription rights, including the terms, procedures and limitations relating to the exchange and exercise of the subscription rights;
- the date on which the right to exercise the subscription rights shall commence, and the date on which the subscription rights shall expire;
- the extent to which the subscription rights may include an over-subscription privilege with respect to unsubscribed securities or an over-allotment privilege to the extent the securities are fully subscribed; and
- if applicable, the material terms of any standby underwriting or purchase arrangement which may be entered into by us in connection with the offering of subscription rights.

The description in the applicable prospectus supplement of any subscription rights we offer will not necessarily be complete and will be qualified in its entirety by reference to the applicable subscription rights certificate, which will be filed with the SEC if we offer subscription rights. We urge you to read the applicable subscription rights certificate and any applicable prospectus supplement in their entirety.

**DESCRIPTION OF UNITS**

We may issue units consisting of some or all of the securities described above, in any combination, including common stock, preferred stock, warrants and/or debt securities. The terms of these units will be set forth in a prospectus supplement. The description of the terms of these units in the related prospectus supplement will not be complete. You should refer to the applicable form of unit and unit agreement for complete information with respect to these units.

## PLAN OF DISTRIBUTION

We may sell the securities covered by this prospectus to one or more underwriters for public offering and sale by them, and may also sell the securities to investors directly or through agents. We will name any underwriter or agent involved in the offer and sale of securities in the applicable prospectus supplement. We have reserved the right to sell or exchange securities directly to investors on our own behalf in jurisdictions where we are authorized to do so. We may distribute the securities from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

We may directly solicit offers to purchase the securities being offered by this prospectus. We may also designate agents to solicit offers to purchase the securities from time to time. We will name in a prospectus supplement any agent involved in the offer or sale of our securities. Unless otherwise indicated in a prospectus supplement, an agent will be acting on a best efforts basis, and a dealer will purchase securities as a principal for resale at varying prices to be determined by the dealer.

If we utilize an underwriter in the sale of the securities being offered by this prospectus, we will execute an underwriting agreement with the underwriter at the time of sale and we will provide the name of any underwriter in the prospectus supplement that the underwriter will use to make resales of the securities to the public. In connection with the sale of the securities, we, or the purchasers of securities for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters or commissions from the purchasers for whom they may act as agent.

We will provide in the applicable prospectus supplement any compensation we pay to underwriters, dealers, or agents in connection with the offering of the securities, and any discounts, concessions or commissions allowed by underwriters to participating dealers. Underwriters, dealers and agents participating in the distribution of the securities may be deemed to be underwriters within the meaning of the Securities Act of 1933, as amended, or the Securities Act, and any discounts and commissions received by them and any profit realized by them on resale of the securities may be deemed to be underwriting discounts and commissions. In compliance with the guidelines of the Financial Industry Regulatory Authority, Inc., or FINRA, the aggregate maximum discount, commission or agency fees or other items constituting underwriting compensation to be received by any FINRA member or independent broker-dealer shall be fair and reasonable. We may enter into agreements to indemnify underwriters, dealers and agents against civil liabilities, including liabilities under the Securities Act, and to reimburse them for certain expenses. We may grant underwriters who participate in the distribution of our securities under this prospectus an option to purchase additional securities in connection with the distribution.

## [Table of Contents](#)

The securities we offer under this prospectus may or may not be listed through the Nasdaq Global Market or any other securities exchange. To facilitate the offering of securities, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of the securities. This may include short sales of the securities, which involves the sale by persons participating in the offering of more securities than we sold to them. In these circumstances, these persons would cover such short positions by making purchases in the open market or by exercising their option to purchase additional securities. In addition, these persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. These transactions may be discontinued at any time.

We may engage in at the market offerings into an existing trading market in accordance with Rule 415(a)(4) under the Securities Act. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and they may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third party in these sale transactions will be an underwriter and will be identified in the applicable prospectus supplement. In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus. The financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

We will file a prospectus supplement to describe the terms of any offering of our securities covered by this prospectus. The prospectus supplement will disclose:

- the terms of the offer;
- the names of any underwriters, including any managing underwriters, as well as any dealers or agents;
- the purchase price of the securities from us;
- the net proceeds to us from the sale of the securities;
- any delayed delivery arrangements;

## Table of Contents

- any options under which underwriters, if any, may purchase additional securities from us;
- any underwriting discounts, commissions or other items constituting underwriters' compensation, and any commissions paid to agents;
- in a subscription rights offering, whether we have engaged dealer-managers to facilitate the offering or subscription, including their name or names and compensation;
- any public offering price; and
- other facts material to the transaction.

We will bear all or substantially all of the costs, expenses and fees in connection with the registration of our securities under this prospectus. The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business.

Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise or the securities are sold by us to an underwriter in a firm commitment underwritten offering. The applicable prospectus supplement may provide that the original issue date for your securities may be more than two scheduled business days after the trade date for your securities. Accordingly, in such a case, if you wish to trade securities on any date prior to the second business day before the original issue date for your securities, you will be required, by virtue of the fact that your securities initially are expected to settle in more than two scheduled business days after the trade date for your securities, to make alternative settlement arrangements to prevent a failed settlement.

### **LEGAL MATTERS**

Unless the applicable prospectus supplement indicates otherwise, Orrick, Herrington & Sutcliffe LLP will pass upon the validity of any securities issued under this prospectus. Any underwriters will be represented by their own legal counsel, which will be named in an accompanying prospectus supplement.

### **EXPERTS**

The audited consolidated financial statements incorporated by reference in this prospectus and elsewhere in the registration statement have been so incorporated by reference in reliance upon the report of Grant Thornton LLP, independent registered public accountants, upon the authority of said firm as experts in accounting and auditing.





**Up to \$100,000,000**

**Common Stock  
Preferred Stock  
Debt Securities  
Warrants  
Subscription Rights  
Units**

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**PROSPECTUS**

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**, 2022**

**The information in this prospectus supplement is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus supplement is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.**

**Subject to completion, dated August 19, 2022**

**PROSPECTUS SUPPLEMENT**

**UP TO \$15,500,000**



**Common Stock**

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In accordance with the terms of the Capital on Demand<sup>TM</sup> Sales Agreement entered into with JonesTrading Institutional Services LLC (“JonesTrading” or the “Agent”), dated August 19, 2022, which we refer to as the Sales Agreement, we may offer and sell under this prospectus supplement and accompanying base prospectus shares of our common stock, having an aggregate offering price of up to \$15,500,000 from time to time through or to the Agent, acting as sales agent or principal.

Our common stock is traded on The Nasdaq Global Market under the symbol “HCWB”. The last reported sale price of our common stock on The Nasdaq Global Market on August 18, 2022 was \$2.26 per share.

The aggregate market value of our outstanding common stock held by non-affiliates was approximately \$51.8 million based on 20,151,063 shares of outstanding common stock held by non-affiliates and a price per share of \$2.57, the closing price of our common stock on July 12, 2022. Pursuant to General Instruction I.B.6 of Form S-3, we may not sell securities registered on Form S-3 with a value more than one-third of the aggregate market value of our common stock held by non-affiliates in any 12-month period, so long as the aggregate market value of our common stock held by non-affiliates remains less than \$75.0 million. In the event that the aggregate market value of our outstanding Common Stock held by non-affiliates equals or exceeds \$75.0 million, then the one-third limitation on sales may not apply. We have not sold any securities pursuant to General Instruction I.B.6 of Form S-3 during the 12 calendar months prior to, and including, the date of this prospectus supplement.

Sales of our common stock, if any, under this prospectus supplement will be made by any method permitted that is deemed an “at the market offering” as defined in Rule 415 under the Securities Act of 1933, as amended (the “Securities Act”). The Agent is not required to sell any specific amount of shares of our common stock, but will act as our sales agent using commercially reasonable efforts consistent with their normal trading and sales practices. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

## [Table of Contents](#)

The Agent will be entitled to compensation at a commission rate of 3.0% of the gross sales price per share of our Common Stock sold. In connection with the sale of our Common Stock on our behalf, the Agent will be deemed to be an “underwriter” within the meaning of the Securities Act and the compensation of the Agent will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to the Agent with respect to certain liabilities, including liabilities under the Securities Act.

We are an “emerging growth company” as that term is used in the Jumpstart Our Business Startups Act of 2012 and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus supplement and future filings.

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**Investing in our securities involves certain risks. You should review carefully the risks and uncertainties referenced under the heading “[Risk Factors](#)” on page S-11 of this prospectus supplement as well as those contained in the accompanying base prospectus and any related free writing prospectus or prospectus supplement we prepare or authorize in connection with this offering, and in the other documents that are incorporated by reference into this prospectus supplement or the accompanying base prospectus.**

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying base prospectus is truthful or complete. Any representation to the contrary is a criminal offense.



The date of this prospectus supplement is \_\_\_\_\_, 2022.

**TABLE OF CONTENTS**

<a href="#">About This Prospectus Supplement</a>	S-1
<a href="#">Where You Can Find More Information; Incorporation By Reference</a>	S-3
<a href="#">Cautionary Note Regarding Forward-Looking Statements</a>	S-5
<a href="#">Prospectus Supplement Summary</a>	S-7
<a href="#">The Offering</a>	S-9
<a href="#">Risk Factors</a>	S-11
<a href="#">Use of Proceeds</a>	S-13
<a href="#">Dilution</a>	S-14
<a href="#">Plan of Distribution</a>	S-16
<a href="#">Legal Matters</a>	S-18
<a href="#">Experts</a>	S-18

## ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and accompanying base prospectus are part of a registration statement that we filed with the Securities and Exchange Commission (the “SEC”) using a “shelf” registration process. Under this shelf registration process, we may from time to time sell shares of our common stock. Under this prospectus supplement, we may from time to time sell shares of our common stock having an aggregate offering price of up to \$15.5 million, at prices and on terms to be determined by market conditions at the time of the offering.

This document contains two parts. The first part consists of this prospectus supplement, which provides you with specific information about this offering. The second part, the accompanying base prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer only to the “prospectus,” we are referring to both parts combined. This prospectus supplement describes the terms of this offering of common stock and also adds to and updates information contained in the accompanying base prospectus and in the documents incorporated by reference into this prospectus supplement. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying base prospectus or in any document incorporated by reference into this prospectus supplement that was filed with the SEC before the date of this prospectus supplement, on the other hand, you should rely on the information in this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference into this prospectus supplement—the statement in the document having the later date modifies or supersedes the earlier statement.

We have not, and the Agent has not, authorized anyone to provide you with any information other than that contained or incorporated by reference in this prospectus supplement, the accompanying base prospectus or any related free writing prospectus to which we have referred you. Neither we nor the Agent take any responsibility for, and can provide no assurance as to the reliability of, any other information others may give you. We are not, and the Agent is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information appearing in this prospectus supplement, the accompanying base prospectus, the documents incorporated by reference herein and therein and any free writing prospectus that we have authorized for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates.

**You should read this prospectus supplement, the accompanying base prospectus, the documents incorporated by reference herein and therein and any free writing prospectus that we have authorized for use in connection with this offering, in their entirety before making an investment decision. See “Incorporation of Certain Documents by Reference” and “Where You Can Find More Information” in this prospectus supplement and in the accompanying base prospectus.**

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## [Table of Contents](#)

In this prospectus supplement, unless the context otherwise requires, the terms “HCW,” the “Company,” “we,” “us,” and “our” refer to HCW Biologics Inc., a Delaware corporation. This prospectus supplement, the accompanying base prospectus, and the information incorporated by reference herein and therein may contain additional trade names, trademarks and service marks of other companies, which are the property of their respective owners. We do not intend our use or display of other companies’ trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, these other companies.

## WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE

### Available Information

We file reports, proxy statements and other information with the SEC. The SEC maintains a web site that contains reports, proxy and information statements and other information about issuers, such as us, who file electronically with the SEC. The address of that website is [www.sec.gov](http://www.sec.gov).

Our web site address is [www.hcwbiologics.com](http://www.hcwbiologics.com). The information on our web site, however, is not, and should not be deemed to be, a part of this prospectus supplement.

This prospectus supplement is part of a registration statement that we filed with the SEC and does not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or us, as provided below. Documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement. Statements in this prospectus supplement about these documents are summaries and each statement is qualified in all respects by reference to the document to which it refers. You should refer to the actual documents for a more complete description of the relevant matters. You may inspect a copy of the registration statement through the SEC's website, as provided above, or at our principal executive offices, 2929 N Commerce Parkway, Miramar, Florida 33025, during normal business hours.

### Incorporation by Reference

The SEC allows us to "incorporate by reference" information that we file with the SEC, which means that we can disclose important information to you by referring you to those other documents. The information incorporated by reference is an important part of this prospectus supplement, and information we file later with the SEC will automatically update and supersede this information. A Current Report (or portion thereof) furnished, but not filed, on Form 8-K shall not be incorporated by reference into this prospectus supplement. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14, or 15(d) of the Exchange Act prior to the termination of any offering of securities made by this prospectus supplement:

- our [Annual Report on Form 10-K](#) for the fiscal year ended December 31, 2021, filed with the SEC on March 29, 2022;
- our Quarterly Reports on Form 10-Q for the quarters ended [March 31, 2022](#) and [June 30, 2022](#) and filed with the SEC on May 13, 2022 and August 12, 2022, respectively;
- our Current Reports on Form 8-K filed on [June 17, 2022](#) and [August 18, 2022](#);
- Our [Definitive Proxy Statement](#) on Schedule 14A, filed with the SEC on April 25, 2022 (but only with respect to information required by Part III of our Annual Report on Form 10-K for the year ended December 31, 2021, which information shall update and supersede information included in Part III of our Annual Report on Form 10-K for the year ended December 31, 2021);

## Table of Contents

- the description of our common stock contained in our registration statement on [Form 8-A](#) filed with the SEC on July 9, 2021 under Section 12 of the Exchange Act, including any amendment or report filed for the purpose of updating such description, including [Exhibit 4.2](#) to our Annual Report on Form 10-K for the fiscal year ended December 31, 2021; and
- filings we make with the SEC pursuant to the Exchange Act after the date of the initial registration statement, of which this prospectus supplement is a part, and prior to the effectiveness of the registration statement.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference in this prospectus supplement and deemed to be part of this prospectus supplement from the date of the filing of such reports and documents.

We will furnish without charge to you, on written or oral request, a copy of any or all of such documents that has been incorporated herein by reference (other than exhibits to such documents unless such exhibits are specifically incorporated by reference into the documents that this prospectus supplement incorporates). Written or oral requests for copies should be directed to HCW Biologics Inc., Attn: Corporate Secretary, 2929 N. Commerce Parkway, Miramar, Florida 33025, telephone (954) 842-2024.



## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the documents incorporated by reference into this prospectus supplement contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 concerning our business, operations and financial performance and conditions, as well as our plans, objectives and expectations for our business operations and financial performance and condition. Any statements contained herein that are not statements of historical fact may be deemed to be forward-looking statements. In some cases, you can identify forward-looking statements by such terminology as “believe,” “may,” “will,” “potentially,” “estimate,” “continue,” “anticipate,” “intend,” “could,” “would,” “project,” “plan,” “expect” and similar expressions that convey uncertainty of future events or outcomes, although not all forward-looking statements contain these words. Forward-looking statements include, but are not limited to, statements about:

- our financial performance;
- the sufficiency of our existing cash and cash equivalents to fund our future operating expenses and capital expenditure requirements;
- our ability to obtain funding for our operations, including funding necessary to develop and commercialize our drug candidates;
- the ability to receive FDA clearance for clinical trials;
- the ability to secure clinical sites, enroll patients, and initiate clinical trials;
- the ability of our clinical trials to demonstrate safety and efficacy of our drug candidates, and other positive results;
- the success, cost and timing of our development activities, preclinical studies and clinical trials;
- the timing and focus of our future clinical trials, and the reporting of data from those trials;
- our plans relating to commercializing our drug candidates, if approved;
- our plans and ability to establish sales, marketing and distribution infrastructure to commercialize any drug candidates for which we obtain approval;
- our ability to attract and retain key scientific and clinical personnel;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;
- our reliance on third parties to conduct clinical trials of our drug candidates, and for the manufacture of our drug candidates for preclinical studies and clinical trials;
- our ability to establish our own manufacturing facilities domestically;
- our ability to expand our drug candidates into additional indications and patient populations;

## Table of Contents

- the success of competing therapies that are or may become available;
- the beneficial characteristics, safety and efficacy of our drug candidates;
- regulatory developments in the United States and other jurisdictions;
- our ability to obtain and maintain regulatory approval of our drug candidates, and any related restrictions, limitations and/or warnings in the label of any approved drug candidate;
- our plans relating to the further development and manufacturing of our drug candidates, including additional indications for which we may pursue;
- our plans and ability to obtain or protect intellectual property rights;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our drug candidates and technology; and
- potential claims relating to our intellectual property.

Forward-looking statements are based on management's current expectations, estimates, forecasts and projections about our business and the industry in which we operate, and management's beliefs and assumptions are not guarantees of future performance or development and involve known and unknown risks, uncertainties and other factors that are in some cases beyond our control, including those described in the section titled "Risk Factors" and elsewhere in this prospectus supplement and the documents incorporated by reference into this prospectus supplement.

Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Accordingly, you should not place undue reliance on forward-looking statements as predictions of future events. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this prospectus supplement to conform these statements to actual results or to changes in our expectations, except as required by law.

You should read this prospectus supplement, the documents incorporated by reference into this prospectus supplement, any free writing prospectus and the documents that we reference in this prospectus and have filed with the SEC, as exhibits to the registration statement of which this prospectus supplement is a part with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

## PROSPECTUS SUPPLEMENT SUMMARY

*This summary highlights information contained in other parts of this prospectus supplement or incorporated by reference in this prospectus supplement from our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2022, and our other filings with the SEC listed below under the heading “Incorporation of Information by Reference.” This summary may not contain all the information that you should consider before investing in securities. You should read the entire prospectus and the information incorporated by reference in this prospectus supplement carefully, including “Risk Factors” and the financial data and related notes and other information incorporated by reference, before making an investment decision. See “Cautionary Note Regarding Forward-Looking Statements.”*

### Overview

We are a biopharmaceutical company focused on discovering and developing novel immunotherapies to lengthen health span by disrupting the link between chronic, low-grade inflammation and age-related diseases. We believe age-related, chronic, low-grade inflammation, or “inflammaging,” is a significant contributing factor to several diseases and conditions, such as cancer, cardiovascular disease, diabetes, neurodegenerative diseases, and autoimmune diseases. The induction and retention of low-grade inflammation in an aging human body is mainly the result of the accumulation of non-proliferative senescent cells and persistent activation of protein complexes, known as inflammasomes, in innate immune cells. These two elements share common mechanisms in promoting secretion of proinflammatory proteins and in many cases interact to drive inflammaging. Our novel approach is to treat both of these elements. We believe our approach has the potential to fundamentally change the treatment of age-related diseases.

We have combined our deep understanding of disease-related immunology with our expertise in advanced protein engineering to develop our TOBI™ (Tissue factOr-Based fusIon) discovery platform for the design of category-defining immunotherapeutic drugs. This modular and tunable technology has allowed us to generate a novel pipeline of internally-developed product candidates capable of activating and targeting desired immune responses and blocking unwanted immunosuppressive activities. Using our TOBI™ platform, we have successfully developed over 30 molecules that can be administered by subcutaneous injection as well as used in adoptive cell therapy approaches. Our focus is to develop immunotherapeutic therapies administered by subcutaneous injection, and we intend to out-license cell therapy based approaches. We have selected two molecules as our lead product candidates: HCW9218 and HCW9302. We have chosen these product candidates because we believe they have the potential to become transformative immunotherapeutics for the treatment of a broad range of age-related diseases, and both can be administered to patients by subcutaneous injection.

In response to physiological or environmental stress, normal tissue cells enter a senescent state of irreversible growth arrest accompanied by the release of Senescence-Associated Secretory Phenotype (“SASP”) factors. SASP factors, including proinflammatory cytokines, chemokines, and proteinases, drive the inflammation cycle, including activation of inflammasomes. As our body ages, senescent cells accumulate and increase the release of SASP factors leading to chronic, low-grade inflammation, and organ/tissue damage. Studies have shown that strategies to reduce or eliminate senescent cells can delay, prevent, and improve age-related dysfunctions, including cancer.

The bifunctionality of HCW9218 allows it to function as both a senolytic and senomorphic immunotherapeutic. HCW9218 is designed to treat the impact of accumulated senescent cells and the SASP factors which they secrete by eliminating senescent cells (i.e., senolytic effect) and reducing SASP factors (i.e., senomorphic effect). This molecule is a heterodimeric, bifunctional fusion protein complex comprising extracellular domains of the human transforming growth factor- $\beta$  (“TGF- $\beta$ ”) receptor II, as a TGF- $\beta$  trap for TGF- $\beta$  neutralization, and a human interleukin (“IL”)-15/IL-15 receptor  $\alpha$  complex for immune cell stimulation. Together, the activities of these domains drive senescent cell clearance and SASP factor neutralization. The Company published a paper authored by our scientific research team in the peer-reviewed journal, *Molecular Therapy*, entitled, “Bifunctional TGF- $\beta$  trap/IL-15 Protein Complex Elicits Potent NK Cell and CD8+ T Cell Immunity Against Solid Tumors.” The paper highlights preclinical data from in vivo studies demonstrating the potential of HCW9218 as a novel immunostimulant with the ability to simultaneously lessen immunosuppression in patients with cancer.

As the first line of defense to infections or tissue injuries, the innate immune system activates inflammasomes to initiate protective immune responses. Similar to senescent cells, activated inflammasomes promote the release of proinflammatory factors. Unresolved activation of inflammasomes due to chronic infection or persistent tissue injury leads to chronic low-grade inflammation which perpetuates this cycle.

HCW9302 is designed to activate and expand regulatory T (“Treg”) cells to suppress the activity of inflammasome-bearing cells and the inflammatory factors which they secrete. This molecule is a single-chain, IL-2-based fusion protein. Inflammasomes are expressed in innate immune cells. When these cells are stimulated by various signals, the inflammasomes become active and the cells release inflammatory factors. In certain conditions, these signaling pathways persist leading to chronic inflammatory responses and associated tissue destruction. Preclinical studies in mouse models have demonstrated the ability of HCW9302 to activate Treg cells and reduce inflammation-related diseases, supporting the potential of HCW9302 to treat a wide variety of autoimmune and age-related diseases.

To date, there has been limited clinical success in targeting senescent cell accumulation or aberrant inflammasome activity using small molecule-based approaches. Studies have found the immune cell activity in young individuals is capable of limiting these processes, which we believe indicates that immunotherapeutic approaches that combine relevant stimulatory and inhibitory components may provide a means of treating age-related diseases by addressing chronic inflammation.

#### **Corporate Information**

We were incorporated under the laws of the State of Delaware in April 2018. Our principal executive offices are located at 2929 N. Commerce Parkway, Miramar, Florida 33025, and our telephone number is (954) 842-2024. Our website address is [www.hcwbiologics.com](http://www.hcwbiologics.com). The information contained on, or that can be accessed through, our website is not part of, and is not incorporated by reference into, this prospectus supplement. We have included our website address in this prospectus supplement solely as an inactive textual reference. Investors should not rely on any such information in deciding whether to purchase our common stock.

## THE OFFERING

Common stock offered by us	Shares of our common stock having an aggregate offering price of up to \$15.5 million.
Manner of Offering	“At the market offering” that may be made from time to time on Nasdaq through or to the Agent, as sales agent or principal. See the section entitled “Plan of Distribution” below.
Common stock to be outstanding immediately after this offering	Up to 42,682,330 shares, assuming sales of 6,858,407 shares of our common stock in this offering at an offering price of \$2.26 per share, which was the last reported sale price of our common stock on The Nasdaq Global Market on August 18, 2022. The actual number of shares issued will vary depending on the number of shares that are sold and the sales price under this offering.
Use of Proceeds	We intend to use the net proceeds from the sale of any securities offered under this prospectus supplement for general corporate purposes. General corporate purposes may include funding the continued progress of our preclinical and clinical development, research and development costs, manufacture and supply of product, potential strategic acquisitions or licensing of complementary businesses, services or technologies, working capital, capital expenditures and other general corporate purposes. See “Use of Proceeds”.
Risk Factors	Investing in our common stock involves certain risks. See the disclosure under the heading “Risk Factors” on page S-11 in this prospectus supplement and under similar headings in other documents incorporated by reference into this prospectus supplement.
The Nasdaq Global Market symbol	“HCWB”
The number of shares of our common stock shown above to be outstanding after this offering is based on 35,823,923 shares of our common stock outstanding as of June 30, 2022, and excludes:	
<ul style="list-style-type: none"><li>• 1,924,317 shares of common stock issuable upon the exercise of stock options outstanding as of June 30, 2022, with a weighted-average exercise price of \$3.02 per share; and</li><li>• 1,961,693 shares of common stock reserved for future issuance under our 2021 Equity Incentive Plan (“2021 EIP”) as of June 30, 2022 (which number of shares does not include the stock options to purchase shares of our common stock or restricted stock units granted after June 30, 2022).</li></ul>	

[Table of Contents](#)

Except as otherwise indicated, all information in this prospectus supplement does not assume or give effect to any exercise of outstanding options or vesting of restricted stock units after June 30, 2022.

## RISK FACTORS

*Investment in any securities offered pursuant to this prospectus supplement and the accompanying base prospectus involves risks. You should carefully consider the risk factors described below and in our most recent Quarterly Report on Form 10-Q, incorporated by reference in this prospectus supplement, any amendment or update thereto reflected in subsequent filings with the SEC, including in our most recent Annual Report on Form 10-K and subsequent Quarterly Reports on Form 10-Q, and all other information contained or incorporated by reference in this prospectus supplement, as updated by our subsequent filings under the Exchange Act. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.*

### **Risks Relating to this Offering**

***If you purchase shares of our common stock sold in this offering, you may experience immediate and substantial dilution in the net tangible book value of your shares.***

The price per share of our common stock being offered may be higher than the net tangible book value per share of our outstanding common stock prior to this offering. Assuming that an aggregate of 6,858,407 shares of our common stock are sold at a price of \$2.26 per share, the last reported sale price of our common stock on The Nasdaq Global Market on August 18, 2022, for aggregate gross proceeds of approximately \$15.5 million, and after deducting commissions and estimated offering expenses payable by us, new investors in this offering will incur immediate dilution of \$0.84 per share. For a more detailed discussion of the foregoing, see the section entitled “Dilution” below.

***You may experience future dilutions as a result of future equity offerings.***

To the extent outstanding stock options are exercised, or outstanding unvested restricted stock units vest, there will be further dilution to new investors. In addition, to the extent we need to raise additional capital in the future and we issue additional shares of common stock or securities convertible or exchangeable for our common stock, our then existing stockholders may experience dilution and the new securities may have rights senior to those of our common stock offered in this offering. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in any future transactions may be higher or lower than the price per share paid by investors in this offering.

***We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.***

Our management will have broad discretion in the application of the net proceeds we receive from this offering, including for any of the purposes described in the section entitled “Use of Proceeds,” and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. Our management might not apply our net proceeds in ways that ultimately increase the value of your investment. We expect to use the net proceeds from this offering to fund research, clinical and process development, working capital, capital expenditures and other general corporate purposes. Additionally, we may use a portion of the net proceeds from this offering to expand our current business by in-licensing or acquiring, as the case may be,

## [Table of Contents](#)

commercial products, product candidates, technologies, compounds, other assets or complementary businesses, using cash or shares of our common stock. However, we have no current commitments or obligations to do so. The failure by our management to apply these funds effectively could harm our business. Pending their use, we plan to invest the net proceeds from this offering in short-term or long-term, investment-grade, interest-bearing securities. These investments may not yield a favorable return to our stockholders. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

***The actual number of shares we will issue under the Sales Agreement, at any one time or in total, is uncertain.***

Subject to certain limitations in the Sales Agreement and compliance with applicable law, we have the discretion to deliver a placement notice to the Agent at any time throughout the term of the Sales Agreement. The number of shares that are sold, if any, by the Agent after we deliver a placement notice will fluctuate based on the market price of the common shares during the sales period and limits we set with the Agent. Because the price per share of each share sold will fluctuate based on the market price of our common stock during the sales period, it is not possible at this stage to predict the number of shares that will be ultimately issued.

***The common stock offered hereby will be sold in “at the market offerings,” and investors who buy shares at different times will likely pay different prices.***

Investors who purchase shares in this offering at different times will likely pay different prices, and so may experience different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices, and numbers of shares sold, and there is no minimum or maximum sales price. Investors may experience a decline in the value of their shares as a result of share sales made at prices lower than the prices they paid.

***Because we do not anticipate paying any cash dividends on our capital stock in the foreseeable future, capital appreciation, if any, will be your sole source of gain.***

We have never paid or declared any cash dividends on our capital stock. We currently intend to retain earnings, if any, to finance the growth and development of our business and we do not anticipate paying any cash dividends in the foreseeable future. As a result, it is likely that only capital appreciation, if any, of our common stock will provide a return to our stockholders.

***We are subject to market price volatility.***

The stock markets in general, and the markets for pharmaceutical, biopharmaceutical and biotechnology stocks in particular, have experienced extreme volatility, including as a result of the ongoing COVID-19 pandemic, that has often been unrelated to the operating performance of the issuer. Furthermore, the trading price of our common stock may be adversely affected by third-parties trying to drive down the market price. Short sellers and others, some of whom post anonymously on social media, may be positioned to profit if our stock declines and their activities can negatively affect our stock price. These broad market and industry factors may seriously harm the market price of our common stock, regardless of our operating performance.



## USE OF PROCEEDS

We may issue and sell shares of our common stock having aggregate sales proceeds of up to \$15.5 million from time to time. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. There can be no assurance that we will sell any shares under or fully utilize the Sales Agreement with the Agent as a source of financing.

We intend to use the net proceeds from the sale of any securities offered under this prospectus supplement for general corporate purposes. General corporate purposes may include funding the continued progress of our preclinical and clinical development, research and development costs, manufacture and supply of product, potential strategic acquisitions or licensing of complementary businesses, services or technologies, working capital, capital expenditures and other general corporate purposes. We may temporarily invest the net proceeds in a variety of capital preservation instruments, including in short and immediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government, until they are used for their stated purpose. We have not determined the amount of net proceeds to be used specifically for such purposes. As a result, management will retain broad discretion over the allocation of net proceeds.

The amounts and timing of our actual expenditures will depend on numerous factors, including the progress of our clinical trials and other development efforts and other factors described under “Risk Factors” in this prospectus supplement, the accompanying base prospectus and the documents incorporated by reference herein and therein, as well as the amount of cash used in our operations. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds. Pending their use as described above, we intend to invest the net proceeds to us from this offering in marketable securities that may include investment-grade interest-bearing securities, money market accounts, certificates of deposit, commercial paper and guaranteed obligations of the U.S. government.

## DILUTION

If you invest in our common stock, your interest will be diluted to the extent of the difference between the price per share you pay in this offering and the net tangible book value per share of our common stock immediately after this offering. Our net tangible book value of our common stock as of June 30, 2022 was approximately \$46.2 million, or approximately \$1.29 per share of common stock based upon 35,823,923 shares outstanding. Net tangible book value per share is equal to our total tangible assets, less our total liabilities, divided by the total number of shares outstanding as of June 30, 2022.

After giving effect to the sale of our common stock in the aggregate amount of \$15.5 million at an assumed offering price of \$2.26 per share, the last reported sale price of our common stock on The Nasdaq Global Market on August 18, 2022, and after deducting commissions and estimated offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2022 would have been approximately \$60.8 million, or approximately \$1.42 per share of common stock. This represents an immediate increase in net tangible book value of \$0.13 per share to our existing stockholders and an immediate dilution in net tangible book value of \$0.84 per share to new investors in this offering.

The following table illustrates this calculation on a per share basis. The as-adjusted information is illustrative only and will adjust based on the actual price to the public, the actual number of shares sold and other terms of the offering determined at the time shares of our common stock are sold pursuant to this prospectus supplement. The as-adjusted information assumes that all of our common stock in the aggregate amount of \$15.5 million is sold at the assumed offering price of \$2.26 per share, the last reported sale price of our common stock on The Nasdaq Global Market on August 18, 2022. The shares sold in this offering, if any, will be sold from time to time at various prices.

Assumed public offering price per share	\$2.26
Net tangible book value per share as of June 30, 2022	\$1.29
Increase in net tangible book value per share attributable to the offering	<u>0.13</u>
As adjusted net tangible book value per share after giving effect to the offering	<u>1.42</u>
Dilution per share to new investors participating in the offering	<u>\$0.84</u>

The table above assumes for illustrative purposes that an aggregate of 6,858,407 shares of our common stock are sold pursuant to this prospectus supplement at a price of \$2.26 per share, the last reported sale price of our common stock on The Nasdaq Global Market on August 18, 2022, for aggregate gross proceeds of \$15.5 million. The shares are being sold from time to time at various prices pursuant to the Sales Agreement with the Agent.

The number of shares of our common stock to be outstanding immediately after this offering is based on 35,823,923 shares of our common stock outstanding as of June 30, 2022. The number of shares outstanding as of June 30, 2022 excludes:

- 1,924,317 shares of common stock issuable upon the exercise of stock options outstanding as of June 30, 2022, with a weighted-average exercise price of \$3.02 per share; and

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[Table of Contents](#)

- 1,961,693 shares of common stock reserved for future issuance under our 2021 EIP as of June 30, 2022 (which number of shares does not include the stock options to purchase shares of our common stock or restricted stock units granted after June 30, 2022).

The foregoing table does not give effect to any exercise of outstanding options or vesting of restricted stock units after June 30, 2022. To the extent options are exercised or restricted stock units vest, there may be further dilution to new investors.

## PLAN OF DISTRIBUTION

On August 19, 2022, we entered into a Sales Agreement (the “Sales Agreement”) with JonesTrading Institutional Services LLC (the “Agent”). Pursuant to this prospectus supplement and the Sales Agreement, we may offer and sell our common stock having an aggregate gross sales price of up to \$15,500,000 from time to time through or to the Agent, acting as agent or principal. A copy of the Sales Agreement is incorporated by reference as an exhibit herein.

Each time that we wish to issue and sell shares of our common stock under the Sales Agreement, if any, we will provide the Agent with a placement notice describing the amount of shares to be sold or the gross proceeds to be raised in a given time period, the time period during which sales are requested to be made, any limitation on the amount of shares of common stock that may be sold in any single day, any minimum price below which sales may not be made or any minimum price requested for sales in a given time period and any other instructions relevant to such requested sales. Upon delivery of a placement notice and subject to the terms and conditions of the Sales Agreement, the Agent may sell our common stock by any method permitted by law deemed to be “at the market offerings” as defined in Rule 415 under the Securities Act. We may instruct the Agent not to sell our common stock if the sales cannot be effected at or above the price designated by us from time to time. We or the Agent may suspend the offering of our common stock upon notice and subject to other conditions.

We will pay the Agent commissions, in cash, for its services in acting as an agent in the sale of our common stock. The Agent will be entitled to compensation of up to 3.0% of the gross proceeds from each sale of our common stock. Because there is no minimum offering amount required as a condition to this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. We have also agreed to reimburse the Agent for certain specified expenses, including the fees and disbursements of their legal counsel in an amount not to exceed \$50,000. Additionally, pursuant to the terms of the Sales Agreement, we agreed to reimburse the Agent for the documented fees and costs of its legal counsel reasonably incurred in connection with the Agent’s ongoing diligence in an amount not to exceed \$10,000. We estimate that the total expenses for the offering, excluding compensation and reimbursements payable to the Agent under the terms of the Sales Agreement, will be approximately \$400,000.

Settlement for sales of our common stock will occur on the second business day following the date on which any sales are made, or on some other date that is agreed upon by us and the Agent in connection with a particular transaction, in return for payment of the net proceeds to us. Sales of our common stock as contemplated in this prospectus supplement will be settled through the facilities of The Depository Trust Company or by such other means as we and the Agent may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

The Agent will use their commercially reasonable best efforts, consistent with its sales and trading practices, to solicit offers to purchase our common stock under the terms and subject to the conditions set forth in the Sales Agreement. In connection with the sale of our common stock on our behalf, the Agent will be deemed to be an “underwriter” within the meaning of the Securities Act and the compensation of the Agent will be deemed to be an underwriting commission or discount. We have agreed to provide indemnification and contribution to the Agent against certain civil liabilities, including liabilities under the Securities Act.

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[Table of Contents](#)

The offering of our common stock pursuant to the Sales Agreement will terminate upon the termination of the Sales Agreement as permitted therein. We and the Agent may terminate the Sales Agreement at any time upon ten days' prior notice or by the Agent at any time in certain circumstances, including the occurrence of a material and adverse change in our business or financial condition that makes it impractical or inadvisable to market our common stock.

The Agent and its affiliates have in the past and may in the future provide various investment banking, commercial banking and other financial services for us, for which services they may in the future receive customary fees.

This prospectus supplement in electronic format may be made available on a website maintained by the Agent who may distribute this prospectus supplement electronically.

**LEGAL MATTERS**

Orrick, Herrington & Sutcliffe LLP, San Francisco, California, will pass upon certain legal matters relating to the issuance and sale of the securities offered hereby on behalf of HCW Biologics Inc. JonesTrading is being represented in connection with this offering by Duane Morris LLP, New York, New York.

**EXPERTS**

The audited financial statements incorporated by reference in this prospectus supplement and elsewhere in the registration statement have been so incorporated by reference in reliance upon the report of Grant Thornton LLP, independent registered public accountants, upon the authority of said firm as experts in accounting and auditing.

**Up to \$15,500,000**



**Common Stock**

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**PROSPECTUS SUPPLEMENT**

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, 2022

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**PART II**

**INFORMATION NOT REQUIRED IN PROSPECTUS**

**Item 14.**

**Other Expenses of Issuance and Distribution**

The following table sets forth estimated expenses in connection with the issuance and distribution of the securities being registered hereby. Each item listed is estimated, except for the SEC registration fee and FINRA filing fee.

SEC registration fee	\$ 9,270
FINRA filing fee	15,500
Printing expenses*	*
Legal fees and expenses*	*
Accounting fees and expenses*	*
Transfer agent and registrar fees and expenses*	*
Rating agency expenses*	*
Miscellaneous expenses*	*
<b>Total*</b>	<b>\$ *</b>

\* These fees and expenses depend on the type of securities offered and the number of issuances and accordingly, cannot be estimated at this time.



**Item 15.**

**Indemnification of Officers and Directors**

Section 145 of the Delaware General Corporation Law authorizes a court to award, or a corporation's board of directors to grant, indemnity to directors and officers under certain circumstances and subject to certain limitations. The terms of Section 145 of the Delaware General Corporation Law are sufficiently broad to permit indemnification under certain circumstances for liabilities, including reimbursement of expenses incurred, arising under the Securities Act of 1933, as amended, or the Securities Act.

As permitted by the Delaware General Corporation Law, the Registrant's restated certificate of incorporation contains provisions that eliminate the personal liability of its directors for monetary damages for any breach of fiduciary duties as a director to the fullest extent permitted by law.

As permitted by the Delaware General Corporation Law, the Registrant's restated bylaws provide that:

- the Registrant is required to indemnify its directors and executive officers to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions;
- the Registrant may indemnify its other employees and agents as set forth in the Delaware General Corporation Law;
- the Registrant is required to advance expenses, as incurred, to its directors and executive officers in connection with a legal proceeding to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions; and
- the rights conferred in the restated bylaws are not exclusive.

The Registrant has entered, and intends to continue to enter, into indemnification agreements with each of its directors and executive officers to provide these directors and executive officers additional contractual assurances regarding the scope of the indemnification set forth in the Registrant's restated certificate of incorporation and restated bylaws and to provide additional procedural protections. At present, there is no pending litigation or proceeding involving a director or executive officer of the Registrant for which indemnification is sought. The indemnification provisions in the Registrant's restated certificate of incorporation, restated bylaws and the indemnification agreements entered into or to be entered into between the Registrant and each of its directors and executive officers may be sufficiently broad to permit indemnification of the Registrant's directors and executive officers for liabilities arising under the Securities Act.

The Registrant currently carries liability insurance for its directors and officers.

## Table of Contents

### **Item 16.**

#### **Exhibits**

The exhibits listed below are filed (except where otherwise indicated) as part of this Registration Statement.

<u>Exhibit No.</u>	<u>Description of Exhibit</u>
1.1*	Form of Underwriting Agreement
1.2	<a href="#">Capital on Demand™ Sales Agreement, dated August 19, 2022, by and between HCW Biologics Inc. and JonesTrading Institutional Services LLC</a>
3.1	<a href="#">Restated Certificate of Incorporation of HCW Biologics Inc. (incorporated herein by reference to Exhibit 3.1 to the HCW Biologics Inc. Current Report on Form 8-K filed on July 26, 2021)</a>
3.2	<a href="#">Restated Bylaws of HCW Biologics Inc.</a> (incorporated herein by reference to Exhibit 3.2 to the HCW Biologics Inc. Current Report on Form 8-K filed on July 26, 2021)
4.1	<a href="#">Specimen Common Stock Certificate</a> (incorporated herein by reference to Exhibit 4.1 to the HCW Biologics Inc. Registration Statement on Form S-1, as amended, filed on July 9, 2021)
4.2	<a href="#">Form of Indenture</a>
4.3*	Form of Debt Security
4.4*	Form of Warrant Agreement (together with form of warrant certificate) with respect to each particular series of warrants issued hereunder
4.5*	Form of Certificate of Designation (together with preferred share stock certificate) with respect to any preferred stock issued hereunder
4.6*	Form of Subscription Rights Agreement (together with form of right certificate)
4.7*	Form of Unit Agreement (together with form of unit certificate)
5.1	<a href="#">Opinion of Orrick, Herrington &amp; Sutcliffe LLP</a>
23.1	<a href="#">Consent of Orrick, Herrington &amp; Sutcliffe LLP (included in Exhibit 5.1)</a>
23.2	<a href="#">Consent of Grant Thornton LLP, Independent Registered Public Accounting Firm</a>
24.1	<a href="#">Power of Attorney (included in the signature page to this Registration Statement)</a>
25.1*	Statement of Eligibility of Trustee on Form T-1
107	<a href="#">Filing Fee Table</a>

\* To be filed by amendment or as an exhibit to a report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended and incorporated herein by reference.

**Item 17.**

**Undertakings**

(a) The undersigned Registrant hereby undertakes:

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

(i) to include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) to reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(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; provided, however, that paragraphs (a)(1)(i), (a)(1)(ii), and (a)(1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such 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 that time shall be deemed to be the initial bona fide offering thereof.

(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.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

## Table of Contents

(i) Each prospectus filed by the Registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability of the Registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned Registrant undertakes that in a primary offering of securities of the undersigned Registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned Registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) any preliminary prospectus or prospectus of the undersigned Registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) any free writing prospectus relating to the offering prepared by or on behalf of the undersigned Registrant or used or referred to by the undersigned Registrant;

(iii) the portion of any other free writing prospectus relating to the offering containing material information about the undersigned Registrant or its securities provided by or on behalf of the undersigned Registrant; and

## Table of Contents

(iv) any other communication that is an offer in the offering made by the undersigned Registrant to the purchaser.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934), 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 that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers, and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer, or controlling person of the Registrant 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 Registrant 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 Securities Act of 1933 and will be governed by the final adjudication of such issue.

(d) The undersigned Registrant hereby undertakes to file an application for the purpose of determining the eligibility of the trustee to act under subsection (a) of Section 310 of the Trust Indenture Act in accordance with the rules and regulations prescribed by the Commission under Section 305(b)(2) of the Trust Indenture Act.

**SIGNATURES**

Pursuant to the requirements of the Securities 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 Miramar, State of Florida, on the 19<sup>th</sup> day of August, 2022.

**HCW BIOLOGICS INC.**

By: /s/ Hing C. Wong, Ph.D.  
Hing C. Wong, Ph.D.  
Chief Executive Officer and Director

**POWER OF ATTORNEY**

Each of the directors and/or officers of HCW Biologics Inc. whose signature appears below hereby appoints Hing C. Wong and Rebecca Byam, and each of them severally as his or her attorney-in-fact to date and file with the Securities and Exchange Commission this registration statement on Form S-3, and to sign, date, and file any and all post-effective amendments to such registration statement, in each case on his or her behalf, in any and all capacities stated below, as appropriate, in such forms as they or any one of them may approve, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done to the end that such registration statement shall comply with the Securities Act of 1933, as amended, and the applicable Rules and Regulations adopted or issued pursuant thereto, as fully and to all intents and purposes as he or she might or could do in person, and generally to do all such things on their behalf in their capacities as officers and directors to enable the Registrant to comply with the provisions of the Securities Act of 1933, as amended, and all requirements of the Securities and Exchange Commission.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities and on the dates indicated below.

<b>Name</b>	<b>Title</b>	<b>Date</b>
<u>/s/ Hing C. Wong, Ph.D.</u> Hing C. Wong, Ph.D.	Chief Executive Officer and Director (Principal Executive Officer)	August 19, 2022
<u>/s/ Rebecca Byam</u> Rebecca Byam	Chief Financial Officer (Principal Financial and Accounting Officer)	August 19, 2022

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[Table of Contents](#)

<hr/> <i>/s/ Scott T. Garrett</i> Scott T. Garrett	Director	August 19 2022
<hr/> <i>/s/ Lisa M. Giles</i> Lisa M. Giles	Director	August 19, 2022
<hr/> <i>/s/ Rick S. Greene</i> Rick S. Greene	Director	August 19, 2022
<hr/> <i>/s/ Gary M. Winer</i> Gary M. Winer	Director	August 19, 2022

**HCW Biologics Inc.**  
Common Stock  
(\$0.0001 par value per share)

**Capital on Demand™ Sales Agreement**

August 19, 2022

JonesTrading Institutional Services LLC  
211 E. 43<sup>rd</sup> Street, 15<sup>th</sup> Floor  
New York, NY 10017

Ladies and Gentlemen:

HCW Biologics Inc., a Delaware corporation (the "Company"), confirms its agreement (this "Agreement") with JonesTrading Institutional Services LLC (the "Agent"), as follows:

1. Issuance and Sale of Shares. The Company agrees that, from time to time during the term of this Agreement, on the terms and subject to the conditions set forth herein, it may issue and sell through or to the Agent, as agent or principal, shares (the "Placement Shares") of common stock of the Company, \$0.0001 par value per share (the "Common Stock"), *provided, however*, that in no event shall the Company issue or sell, through or to Agent, Placement Shares for an aggregate gross sales proceeds that would exceed (a) the dollar amount of shares of Common Stock registered on the Registration Statement (as defined below), (b) the number of authorized but unissued shares of Common Stock, or (c) dollar amount of shares of Common Stock permitted to be sold under Form S-3, including General Instruction I.B.6 of Form S-3 to the extent it remains applicable, or (iv) the dollar amount of shares of Common Stock for which the Company has filed a Prospectus (as defined below) (the least of (i), (ii), (iii) and (iv), the "Maximum Amount"). Notwithstanding anything to the contrary contained herein, the parties hereto agree that compliance with the limitations set forth in this Section 1 on the amount of Placement Shares issued and sold under this Agreement shall be the sole responsibility of the Company and that Agent shall have no obligation in connection with such compliance. The issuance and sale of Placement Shares hereunder will be effected pursuant to the Registration Statement and at no earlier time than such time as the Registration Statement shall have been declared effective by the Securities and Exchange Commission (the "Commission"), although nothing in this Agreement shall be construed as requiring the Company to issue any Placement Shares.

As of the date hereof, the Company has filed, in accordance with the provisions of the Securities Act of 1933, as amended, and the rules and regulations thereunder (the "Securities Act"), with the Commission a registration statement on Form S-3, including a base prospectus, relating to certain securities, including the Placement Shares to be issued from time to time by the Company, and which incorporates by reference documents that the Company has filed or will file in accordance with the provisions of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the rules and regulations thereunder (the "Exchange Act Regulations"). The Company has prepared a prospectus supplement to the base prospectus included as part of the



registration statement specifically relating to the Placement Shares (the "Prospectus Supplement"). The Company will furnish to the Agent, for use by the Agent, copies of the base prospectus included as part of such registration statement, as supplemented by Prospectus Supplement, relating to the Placement Shares. Except where the context otherwise requires, such registration statement, and any post-effective amendment thereto, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus (as defined below) subsequently filed with the Commission pursuant to Rule 424(b) under the Securities Act or deemed to be a part of such registration statement pursuant to Rule 430B or 462(b) under the Securities Act or any subsequent registration statement on Form S-3 filed pursuant to Rule 415(a)(6) under the Securities Act by the Company to cover any Placement Shares, as a result of the end of the three-year period described in Rule 415(a)(5) of the Securities Act, is herein called the "Registration Statement." The base prospectus, including all documents incorporated therein by reference, to the extent such information has not been superseded or modified in accordance with Rule 412 under the Securities Act (as qualified by Rule 430B(g) of the Securities Act), included in the Registration Statement, as it may be supplemented by one or more prospectus supplements, in the form in which such Prospectus Supplement has most recently been filed by the Company with the Commission pursuant to Rule 424(b) under the Securities Act, together with any then issued Issuer Free Writing Prospectus (defined below), is herein called the "Prospectus." Any reference herein to the Registration Statement, the Prospectus or any amendment or supplement thereto shall be deemed to refer to and include the documents incorporated by reference therein, and any reference herein to the terms "amend," "amendment" or "supplement" with respect to the Registration Statement or the Prospectus shall be deemed to refer to and include the filing after the execution hereof of any document with the Commission deemed to be incorporated by reference therein.

Any reference herein to the Registration Statement, the Prospectus Supplement, the Prospectus or any Issuer Free Writing Prospectus shall be deemed to refer to and include the documents, if any, incorporated by reference therein (the "Incorporated Documents"), including, unless the context otherwise requires, the documents, if any, filed as exhibits to such Incorporated Documents. Any reference herein to the terms "amend," "amendment" or "supplement" with respect to the Registration Statement, the Prospectus Supplement, the Prospectus or any Issuer Free Writing Prospectus shall be deemed to refer to and include the filing of any document under the Exchange Act on or after the most-recent effective date of the Registration Statement, or the date of the Prospectus or such Issuer Free Writing Prospectus, as the case may be, and incorporated therein by reference. For purposes of this Agreement, all references to the Registration Statement, the Prospectus or to any amendment or supplement thereto shall be deemed to include any copy filed with the Commission pursuant to its Electronic Data Gathering Analysis and Retrieval system, or if applicable, the Interactive Data Electronic Application system when used by the Commission (collectively, "EDGAR").

2. Placements. Each time that the Company wishes to issue and sell Placement Shares hereunder (each, a "Placement"), it will notify the Agent by email notice (or other method mutually agreed to in writing by the Parties) of the number or dollar value of Placement Shares to be sold, the time period during which sales are requested to be made, any limitation on the number of Placement Shares that may be sold in any one Trading Day and any minimum price below which sales may not be made (a "Placement Notice"), the form of which is attached hereto as Schedule 1. The Placement Notice shall originate from any of the individuals from the Company set forth

on Schedule 3 (with a copy to each of the other individuals from the Company listed on such schedule), and shall be addressed to each of the individuals from the Agent set forth on Schedule 3, as such Schedule 3 may be amended from time to time. The Placement Notice shall be effective unless and until (i) the Agent declines to accept the terms contained therein for any reason, in its sole discretion, (ii) the entire amount of the Placement Shares to be sold thereunder have been sold, (iii) the Company suspends or terminates the Placement Notice for any reason, in its sole discretion, (iv) the Company issues a subsequent Placement Notice with parameters superseding those of the earlier dated Placement Notice, or (v) this Agreement has been terminated under the provisions of Section 12. The amount of any discount, commission or other compensation to be paid by the Company to the Agent in connection with the sale of the Placement Shares shall be calculated in accordance with the terms set forth in Schedule 2. It is expressly acknowledged and agreed that neither the Company nor the Agent will have any obligation whatsoever with respect to a Placement or any Placement Shares unless and until the Company delivers a Placement Notice to the Agent and the Agent does not decline such Placement Notice pursuant to the terms set forth above, and then only upon the terms specified therein and herein. In the event of a conflict between the terms of this Agreement and the terms of a Placement Notice, the terms of the Placement Notice will control.

3. Sale of Placement Shares by the Agent. Subject to the provisions of Section 5(a), the Agent, for the period specified in the Placement Notice, will use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of the Nasdaq Capital Market (the "Exchange"), to sell the Placement Shares up to the amount specified in, and otherwise in accordance with the terms of such Placement Notice. The Agent will provide written confirmation to the Company (including by email correspondence to each of the individuals of the other party set forth on Schedule 3, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) no later than the opening of the Trading Day immediately following the Trading Day on which it has made sales of Placement Shares hereunder setting forth the number of Placement Shares sold on such day, the compensation payable by the Company to the Agent pursuant to Section 2 with respect to such sales, and the Net Proceeds (as defined below) payable to the Company, with an itemization of the deductions made by the Agent (as set forth in Section 5(b)) from the gross proceeds that it receives from such sales. Subject to the terms of the Placement Notice, the Agent may sell Placement Shares by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415(a)(4) under the Securities Act. During the term of this Agreement, neither the Agent nor an affiliate purchaser (as such term is defined in Regulation M) shall, directly or indirectly, engage in (i) any short sale of any security of the Company, as defined in Regulation SHO, (ii) any sale of any security of the Company that the Agent does not own or any sale which is consummated by the delivery of a security of the Company borrowed by, or for the account of, the Agent or (iii) any market making, bidding, stabilization or other trading activity with regard to the Common Stock or related derivative securities, in each case if such activity would be prohibited under Regulation M or other anti-manipulation rules under the Securities Act or Exchange Act.

4. Suspension of Sales. The Company or the Agent may, upon notice to the other party in writing (including by email correspondence to each of the individuals of the other party set forth on Schedule 3, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) or by telephone (confirmed

immediately by verifiable facsimile transmission or email correspondence to each of the individuals of the other party set forth on Schedule 3), suspend any sale of Placement Shares; provided, however, that such suspension shall not affect or impair any party's obligations with respect to any Placement Shares sold hereunder prior to the receipt of such notice. While a suspension is in effect, any obligation under sections 7(l), 7(m) and 7(n) with respect to the delivery of certificates, opinions or comfort letters to the Agent shall be waived. Each party agrees that no such notice under this Section 4 shall be effective against any other party unless it is made to one of the individuals named on Schedule 3 hereto as associated with such other party, as such Schedule may be amended in writing from time to time.

5. Sale and Delivery to the Agent; Settlement.

(a) Sale of Placement Shares. On the basis of the representations and warranties herein contained and subject to the terms and conditions herein set forth, upon the Agent's acceptance of the terms of a Placement Notice, and unless the sale of the Placement Shares described therein has been declined, suspended, or otherwise terminated in accordance with the terms of this Agreement, the Agent, for the period specified in the Placement Notice, will use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such Placement Shares up to the amount specified in such Placement Notice, and otherwise in accordance with the terms of such Placement Notice. The Company acknowledges and agrees that (i) there can be no assurance that the Agent will be successful in selling Placement Shares, (ii) the Agent will incur no liability or obligation to the Company or any other person or entity if it does not sell Placement Shares for any reason other than a failure by the Agent to use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable law and regulations to sell such Placement Shares as required under this Agreement and (iii) the Agent shall be under no obligation to purchase Placement Shares on a principal basis pursuant to this Agreement, except as otherwise agreed by the Agent and the Company.

(b) Settlement of Placement Shares. Unless otherwise specified in the applicable Placement Notice, settlement for sales of Placement Shares will occur on the second (2<sup>nd</sup>) Trading Day (or such earlier day as is industry practice for regular-way trading) following the date on which such sales are made (each, a "Settlement Date"). The Agent shall notify the Company of each sale of Placement Shares no later than the opening day of the Trading Day following the Trading Day that the Agent sold Placement Shares. The amount of proceeds to be delivered to the Company on a Settlement Date against receipt of the Placement Shares sold (the "Net Proceeds") will be equal to the aggregate sales price received by the Agent, after deduction for (i) the Agent's commission, discount or other compensation for such sales payable by the Company pursuant to Section 2 hereof, and (ii) any transaction fees imposed by any governmental or self-regulatory organization in respect of such sales.

(c) Delivery of Placement Shares. On or before each Settlement Date, the Company will, or will cause its transfer agent to, electronically transfer the Placement Shares being sold by crediting the Agent's or its designee's account (provided the Agent shall have given the Company written notice of such designee at least one Trading Day prior to the Settlement Date) at The Depository Trust Company through its Deposit and Withdrawal at Custodian System or by such other means of delivery as may be mutually agreed upon by the parties hereto which in all cases shall be freely tradable, transferable, registered shares in good deliverable form. On each

Settlement Date, the Agent will deliver the related Net Proceeds in same day funds to an account designated by the Company on, or prior to, the Settlement Date. The Company agrees that if the Company, or its transfer agent (if applicable), defaults in its obligation to deliver Placement Shares on a Settlement Date through no fault of the Agent, the Company agrees that in addition to and in no way limiting the rights and obligations set forth in Section 10(a) hereto, it will (i) hold the Agent harmless against any loss, claim, damage, or reasonable and documented expense (including reasonable and documented legal fees and expenses), as incurred, arising out of or in connection with such default by the Company or its transfer agent (if applicable) and (ii) pay to the Agent (without duplication) any commission, discount, or other compensation to which it would otherwise have been entitled absent such default.

(d) Limitations on Offering Size. Under no circumstances shall the Company cause or request the offer or sale of any Placement Shares if, after giving effect to the sale of such Placement Shares, the aggregate gross sales proceeds of Placement Shares sold pursuant to this Agreement would exceed the lesser of (A) together with all sales of Placement Shares under this Agreement, the Maximum Amount, (B) the amount available for offer and sale under the currently effective Registration Statement and (C) the amount authorized from time to time to be issued and sold under this Agreement by the Company's board of directors, a duly authorized committee thereof or a duly authorized executive committee, and notified to the Agent in writing. Under no circumstances shall the Company cause or request the offer or sale of any Placement Shares pursuant to this Agreement at a price lower than the minimum price authorized from time to time by the Company's board of directors, duly authorized committee thereof or a duly authorized executive committee, and notified to the Agent in writing. Further, under no circumstances shall the Company cause or permit the aggregate gross sales proceeds of Placement Shares sold pursuant to this Agreement to exceed the Maximum Amount.

6. Representations and Warranties of the Company. Except as disclosed in the Registration Statement or Prospectus (including the Incorporated Documents), the Company represents and warrants to, and agrees with the Agent that as of the date of this Agreement and as of each Applicable Time (as defined below), unless such representation, warranty or agreement specifies otherwise:

(a) Registration Statement and Prospectus. As of the date of this Agreement, the Company and the transactions contemplated by this Agreement meet the requirements for and comply with the conditions for the use of Form S-3 under the Securities Act. The Registration Statement has been or will be filed with the Commission and has been or will be declared effective by the Commission under the Securities Act prior to the issuance of any Placement Notice by the Company. The Prospectus Supplement will name Agent as agent, in the section entitled "Plan of Distribution." The Company has not received, and has no notice of, any order of the Commission preventing or suspending the use of the Registration Statement, or threatening or instituting proceedings for that purpose. The Registration Statement and the offer and sale of Placement Shares as contemplated hereby meet the requirements of Rule 415 under the Securities Act and comply in all material respects with said Rule. Any statutes, regulations, contracts or other documents that are required to be described in the Registration Statement or the Prospectus or to be filed as exhibits to the Registration Statement have been or will be so described or filed. Copies of the Registration Statement, the Prospectus, and any such amendments or supplements and all documents incorporated by reference therein that were filed with the Commission on or prior to

the date of this Agreement have been delivered, or are available through EDGAR, to the Agent and its counsel. The Company has not distributed and, prior to the later to occur of each Settlement Date and completion of the distribution of the Placement Shares, will not distribute any offering material in connection with the offering or sale of the Placement Shares other than the Registration Statement and the Prospectus and any Issuer Free Writing Prospectus to which the Agent has consented (any such consent not to be unreasonably withheld, conditioned or delayed). The Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act, delisting the Common Stock from the Exchange, nor has the Company received any notification that the Commission or the Exchange is contemplating terminating such registration or listing. To the Company's knowledge, it is in compliance with all applicable listing requirements of the Exchange.

(b) No Misstatement or Omission. The Registration Statement, when it became or becomes effective, and the Prospectus, and any amendment or supplement thereto, on the date of such Prospectus or amendment or supplement, conformed and will conform in all material respects with the requirements of the Securities Act. At each Settlement Date, the Registration Statement and the Prospectus, and any amendment or supplement thereto, as of such date, will conform in all material respects with the requirements of the Securities Act. The Registration Statement, when it became or becomes effective, did not, and will not, contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. The Prospectus and any amendment or supplement thereto, on the date thereof and at each Applicable Time (defined below), did not and will not include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading. The documents incorporated by reference in the Prospectus, and any amendment or supplement thereto, did not, and any further documents filed and incorporated by reference therein will not, when filed with the Commission, contain an untrue statement of a material fact or omit to state a material fact required to be stated in such document or necessary to make the statements in such document, in light of the circumstances under which they were made, not misleading. The foregoing shall not apply to statements in, or omissions from, any such document made in reliance upon, and in conformity with, information furnished to the Company by Agent specifically for use in the preparation thereof.

(c) Conformity with Securities Act and Exchange Act. The Registration Statement, the Prospectus, any Issuer Free Writing Prospectus or any amendment or supplement thereto, and the Incorporated Documents, when such documents were or are filed with the Commission under the Securities Act or the Exchange Act or became or become effective under the Securities Act, as the case may be, conformed and will conform in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable.

(d) Financial Information. The financial statements of the Company included or incorporated by reference in the Registration Statement, the Prospectus and the Issuer Free Writing Prospectuses, if any, together with the related notes and schedules, present fairly, in all material respects, the financial position of the Company and the Subsidiaries (as defined below) as of the dates indicated and the results of operations, cash flows and changes in stockholders' equity of the Company and the Subsidiaries for the periods specified (subject, in the case of unaudited interim financial statements, to normal year-end audit adjustments) and have been

prepared in compliance with the requirements of the Securities Act and Exchange Act and in conformity with GAAP (as defined below) applied on a consistent basis (except for (i) such adjustments to accounting standards and practices as are noted therein, (ii) in the case of unaudited interim financial statements, to the extent such financial statements may not include footnotes required by GAAP or may be condensed or summary statements and (iii) such adjustments which will not be material, either individually or in the aggregate) during the periods involved. The summary and selected financial data with respect to the Company and the Subsidiaries contained or incorporated by reference in the Registration Statement, the Prospectus and the Issuer Free Writing Prospectuses, if any, fairly present in all material respects the information shown therein as of the respective dates and for the respective periods specified and are derived from the financial statements set forth in the Registration Statement and the Prospectus and the other books and records of the Company. There are no financial statements that are required to be included or incorporated by reference in the Registration Statement, or the Prospectus that are not included or incorporated by reference as required; the Company and the Subsidiaries do not have any material liabilities or obligations, direct or contingent (including any off-balance sheet obligations), not described in the Registration Statement (excluding the exhibits thereto), and the Prospectus. All disclosures contained or incorporated by reference in the Registration Statement, the Prospectus and the Issuer Free Writing Prospectuses, if any, regarding “non-GAAP financial measures” (as such term is defined by the rules and regulations of the Commission) comply in all material respects with Regulation G of the Exchange Act and Item 10 of Regulation S-K under the Securities Act, to the extent applicable.

(e) Conformity with EDGAR Filing. The Prospectus delivered to the Agent for use in connection with the sale of the Placement Shares pursuant to this Agreement will be identical to the versions of the Prospectus created to be transmitted to the Commission for filing via EDGAR, except to the extent permitted by Regulation S-T.

(f) Organization. The Company and its Subsidiaries, if any, are, and will be, duly organized, validly existing as a corporation and in good standing under the laws of their respective jurisdictions of organization. Each of the Company and the Subsidiaries is duly licensed or qualified as a foreign corporation for transaction of business and in good standing under the laws of each other jurisdiction in which its ownership or lease of property or the conduct of its business requires such license or qualification, and has all corporate power and authority necessary to own or hold its properties and to conduct its business as described in the Registration Statement and the Prospectus, except where the failure to be so qualified or in good standing or have such power or authority would not, individually or in the aggregate, reasonably be expected to have a material adverse effect on or affecting the assets, business, operations, earnings, properties, condition (financial or otherwise), prospects, stockholders’ equity or results of operations of the Company and the Subsidiaries taken as a whole, or prevent or materially interfere with consummation of the transactions contemplated hereby (a “Material Adverse Effect”).

(g) Subsidiaries. The Company’s only Subsidiaries, if any, are set forth on Exhibit 21.1 to the Company’s Annual Report on Form 10-K for the most recently ended fiscal year; provided, however, if the Company has not filed an exhibit to the Company’s Annual Report on Form 10-K for the most recently ended fiscal year pursuant to Item 601(b)(21) of Regulation S-K because it had no Subsidiaries (as was the case for the Annual Report on Form 10-K filed with the Commission on March 29, 2022), then the Company will be deemed to have no

Subsidiaries for purposes of this Agreement. The Company owns directly or indirectly, all of the equity interests of the Subsidiaries free and clear of any lien, charge, security interest, encumbrance, right of first refusal or other restriction, and all the equity interests of the Subsidiaries are validly issued and are fully paid, nonassessable and free of preemptive and similar rights.

(h) No Violation or Default. Neither the Company nor any Subsidiary is (i) in violation of its charter or by-laws or similar organizational documents; (ii) in default, and no event has occurred that, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant or condition contained in any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any Subsidiary is a party or by which the Company or any Subsidiary is bound or to which any of the property or assets of the Company or any Subsidiary is subject; or (iii) in violation of any law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority, except, in the case of each of clauses (ii) and (iii) above, for any such violation or default that would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. To the Company's knowledge, no other party under any material contract or other agreement to which it or any Subsidiary is a party is in default in any respect thereunder where such default would reasonably be expected to have a Material Adverse Effect.

(i) No Material Adverse Effect. Subsequent to the latest date of which information is given in the Registration Statement, the Prospectus and the Issuer Free Writing Prospectuses, if any, (including any document deemed incorporated by reference therein), there has not been (i) any Material Adverse Effect or the occurrence of any development that the Company reasonably expects will result in a Material Adverse Effect, (ii) any transaction which is material to the Company and the Subsidiaries taken as a whole, (iii) any obligation or liability, direct or contingent (including any off-balance sheet obligations), incurred by the Company or the Subsidiaries which is material to the Company and the Subsidiaries taken as a whole, (iv) any material change in the capital stock or outstanding long-term indebtedness of the Company or the Subsidiaries (other than (A) the grant of awards under equity incentive plans, (B) changes in the number of shares of outstanding Common Stock due to exercise or conversion of securities exercisable for or convertible into Common Stock outstanding as of the date of this Agreement, (C) any repurchase of capital stock of the Company, (D) as a result of the sale of Placement Shares or (E) other than as publicly reported or announced) or (v) any dividend or distribution of any kind declared, paid or made on the capital stock of the Company or any Subsidiary, other than in each case above in the ordinary course of business or as otherwise disclosed in the Registration Statement or Prospectus (including any document deemed incorporated by reference therein).

(j) Capitalization. The issued and outstanding shares of capital stock of the Company have been validly issued, are fully paid and non-assessable and, other than as disclosed in the Registration Statement or the Prospectus, are not subject to any preemptive rights, rights of first refusal or similar rights. The Company has an authorized, issued and outstanding capitalization as set forth in the Registration Statement and the Prospectus as of the dates referred to therein (other than the grant of options and restricted stock units under the Company's existing stock option plans, or changes in the number of outstanding shares of Common Stock of the Company due to the issuance of shares upon the exercise or conversion of securities exercisable for, or convertible into, Common Stock outstanding on the date hereof) and such authorized capital

stock conforms in all material respects to the description thereof set forth in the Registration Statement and the Prospectus. The description of the securities of the Company in the Registration Statement and the Prospectus is complete and accurate in all material respects. Except as disclosed in the Registration Statement or the Prospectus, as of the date referred to therein, the Company does not have outstanding any options to purchase, or any rights or warrants to subscribe for, or any securities or obligations convertible into, or exchangeable for, or any contracts or commitments to issue or sell, any shares of capital stock or other securities.

(k) Authorization; Enforceability. The Company has full legal right, power and authority to enter into this Agreement and perform the transactions contemplated hereby. This Agreement has been duly authorized, executed and delivered by the Company and is a legal, valid and binding agreement of the Company enforceable in accordance with its terms, except to (i) the extent that enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally and by general equitable principles, (ii) as limited by relating to the availability of specific performance, injunctive relief or other equitable remedies, and (iii) the indemnification and contribution provisions of Section 10 hereof may be limited by federal or state securities laws and public policy considered in respect thereof.

(l) Authorization of Placement Shares. The Placement Shares, when issued and delivered pursuant to the terms approved by the board of directors of the Company or a duly authorized committee thereof, against payment therefor as provided herein, will be duly authorized, validly issued and fully paid and non-assessable, free and clear of any pledge, lien, encumbrance, security interest or other claim, including any statutory or contractual preemptive rights, resale rights, rights of first refusal or other similar rights, and will be registered pursuant to Section 12 of the Exchange Act. The Placement Shares, when issued, will conform in all material respects to the description thereof set forth in or incorporated into the Prospectus.

(m) No Consents Required. No consent, approval, authorization, order, registration or qualification of or with any court or arbitrator or governmental or regulatory authority having jurisdiction over the Company is required for the execution, delivery and performance by the Company this Agreement, the issuance and sale by the Company of the Placement Shares, except for such consents, approvals, authorizations, orders and registrations or qualifications as may be obtained or be required under applicable state securities laws or by the by-laws and rules of the Financial Industry Regulatory Authority ("FINRA") or the Exchange in connection with the sale of the Placement Shares by the Agent.

(n) No Preferential Rights. (i) No person, as such term is defined in Rule 1-02 of Regulation S-X promulgated under the Securities Act (each, a "Person"), has the right, contractual or otherwise, to cause the Company to issue or sell to such Person any Common Stock or shares of any other capital stock or other securities of the Company (other than upon the exercise of options or warrants to purchase Common Stock), (ii) no Person has any preemptive rights, resale rights, rights of first refusal, or any other rights (whether pursuant to a "poison pill" provision or otherwise) to purchase any Common Stock or shares of any other capital stock or other securities of the Company, (iii) no Person has the right to act as an underwriter or as a financial advisor to the Company in connection with the offer and sale of the Placement Shares, and (iv) no Person has the right, contractual or otherwise, to require the Company to register under the Securities Act any Common Stock or shares of any other capital stock or other securities of the Company, or to



include any such shares or other securities in the Registration Statement or the offering contemplated thereby, whether as a result of the filing or effectiveness of the Registration Statement or the sale of the Placement Shares as contemplated thereby or otherwise, except for such rights as have been or will be duly waived on or prior to the date hereof.

(o) Independent Public Accountant. The Company's accountants, whose report on the financial statements of the Company is filed with the Commission as part of the Company's most recent Annual Report on Form 10-K filed with the Commission and incorporated by reference into the Registration Statement and the Prospectus, are and, during the periods covered by their report, were an independent registered public accounting firm with respect to the Company within the meaning of the Securities Act and the Public Company Accounting Oversight Board (United States). To the Company's knowledge, the Company's accountants are not in violation of the auditor independence requirements of the Sarbanes-Oxley Act of 2002 (the "Sarbanes-Oxley Act") with respect to the Company.

(p) Enforceability of Agreements. To the Company's knowledge, all agreements between the Company and third parties expressly referenced in the Prospectus, other than such agreements that have expired by their terms or the termination of which is disclosed in documents filed by the Company on EDGAR, are legal, valid and binding obligations of the Company enforceable against the Company in accordance with their respective terms, except to the extent that (i) enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally and by general equitable principles and (ii) the indemnification provisions of certain agreements may be limited by federal or state securities laws or public policy considerations in respect thereof; except for any unenforceability that, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect.

(q) No Litigation. There are no legal, governmental or regulatory actions, suits or proceedings pending, nor, to the Company's knowledge, any legal, governmental or regulatory investigations, to which the Company or any Subsidiary is a party or to which any property of the Company or any Subsidiary is the subject that, individually or in the aggregate, if determined adversely to the Company or any Subsidiary, would reasonably be expected to have a Material Adverse Effect or materially and adversely affect the ability of the Company to perform its obligations under this Agreement; to the Company's knowledge, no such actions, suits or proceedings are threatened or contemplated by any governmental or regulatory authority or threatened by others that, individually or in the aggregate, if determined adversely to the Company or any Subsidiary, would reasonably be expected to have a Material Adverse Effect; and (i) there are no current or pending legal, governmental or regulatory audits or investigations, actions, suits or proceedings that are required under the Securities Act to be described in the Prospectus that are not so described; and (ii) there are no contracts or other documents that are required under the Securities Act to be filed as exhibits to the Registration Statement that are not so filed.

(r) Licenses and Permits. The Company and the Subsidiaries have made all filings, applications and submissions required by, possesses and is operating in compliance with, all approvals, licenses, certificates, consents, orders, permits and other authorizations issued by, and have made all declarations and filings with, the appropriate federal, state, local or foreign governmental or regulatory authorities that are necessary for the ownership or lease of their

respective properties or the conduct of their respective businesses as described in the Registration Statement and the Prospectus (the “Permits”), except where the failure to possess, obtain or make the same would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. Neither the Company nor any Subsidiary has received written notice of any proceeding relating to revocation or modification of any such Permit or has any reason to believe that such Permit will not be renewed in the ordinary course, except where the failure to obtain any such renewal would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(s) Regulatory Filings. The Company has not failed to file with the applicable regulatory authorities any required filing, declaration, listing, registration, report or submission, except for such failures that, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect; all such filings, declarations, listings, registrations, reports or submissions were in compliance with applicable laws when filed and no deficiencies have been asserted by any applicable regulatory authority with respect to any such filings, declarations, listings, registrations, reports or submissions, except for any deficiencies that, individually or in the aggregate, would not reasonably be expected to have a Material Adverse Effect.

(t) Market Capitalization. At the time the Registration Statement was or will be declared effective, and at the time the Company’s most recent Annual Report on Form 10-K was filed with the Commission, the Company met or will meet the then applicable requirements for the use of Form S-3 under the Securities Act, including, but not limited to, General Instruction I.B.6 of Form S-3, if applicable. The aggregate market value of the outstanding voting and non-voting common equity (as defined in Securities Act Rule 405) of the Company held by persons other than affiliates of the Company (pursuant to Securities Act Rule 144, those that directly, or indirectly through one or more intermediaries, control, or are controlled by, or are under common control with, the Company) (the “Non-Affiliate Shares”), was equal to approximately \$51.8 million (calculated by multiplying (x) the highest price at which the common equity of the Company closed on the Exchange on a Trading Day within sixty days of the date of this Agreement times (y) the number of Non-Affiliate Shares). The Company is not a shell company (as defined in Rule 405 under the Securities Act) and has not been a shell company for at least 12 calendar months previously and if it has been a shell company at any time previously, has filed current Form 10 information (as defined in Instruction I.B.6 of Form S-3) with the Commission at least 12 calendar months previously reflecting its status as an entity that is not a shell company.

(u) No Material Defaults. Neither the Company nor any Subsidiary has defaulted on any installment on indebtedness for borrowed money or on any rental on one or more long-term leases, which defaults, individually or in the aggregate, would reasonably be expected to have a Material Adverse Effect. The Company has not filed a report pursuant to Section 13(a) or 15(d) of the Exchange Act since the filing of its last Annual Report on Form 10-K, indicating that it (i) has failed to pay any dividend or sinking fund installment on preferred stock or (ii) has defaulted on any installment on indebtedness for borrowed money or on any rental on one or more long-term leases, which defaults, individually or in the aggregate, would reasonably be expected to have a Material Adverse Effect.

(v) Certain Market Activities. Neither the Company, any Subsidiary nor to the Company's knowledge any of its directors, officers or controlling persons has taken, directly or indirectly, any action designed, or that has constituted or would reasonably be expected to cause or result in, under the Exchange Act or otherwise, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Placement Shares.

(w) Broker/Dealer Relationships. Neither the Company, any of its Subsidiaries, nor any of the Company's affiliates (i) is required to register as a "broker" or "dealer" in accordance with the provisions of the Exchange Act or (ii) directly or indirectly through one or more intermediaries, controls or is a "person associated with a member" or "associated person of a member" (within the meaning set forth in the rules and regulations of FINRA).

(x) No Reliance. The Company has not relied upon the Agent or legal counsel for the Agent for any legal, tax or accounting advice in connection with the offering and sale of the Placement Shares.

(y) Taxes. The Company and the Subsidiaries have filed all federal, state, local and foreign tax returns which have been required to be filed and paid all taxes shown thereon through the date hereof, to the extent that such taxes have become due and are not being contested in good faith, except where the failure to file or pay would not reasonably be expected to have a Material Adverse Effect. Except as otherwise disclosed in or contemplated by the Registration Statement or the Prospectus, no tax deficiency has been determined adversely to the Company or any Subsidiary which has had, individually or in the aggregate, a Material Adverse Effect. The Company has no knowledge of any federal, state or other governmental tax deficiency, penalty or assessment which has been asserted or threatened against it which would reasonably be expected to have a Material Adverse Effect.

(z) Title to Real and Personal Property. The Company and the Subsidiaries have good and marketable title to all items of real property owned by them and good and valid title to all personal property described in the Registration Statement or Prospectus as being owned by them that are material to the businesses of the Company or such Subsidiary, in each case free and clear of all liens, encumbrances and claims, except those that (i) do not materially interfere with the use made and proposed to be made of such property by the Company and the Subsidiaries or (ii) would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. Any real property described in the Registration Statement or Prospectus as being leased by the Company and the Subsidiaries is held by them under valid, existing and enforceable leases, except those that (A) do not materially interfere with the use made or proposed to be made of such property by the Company or the Subsidiaries or (B) would not reasonably be expected to have a Material Adverse Effect.

(aa) Intellectual Property. The Company and the Subsidiaries own or possess enforceable rights to use all patents, patent applications, trademarks (both registered and unregistered), service marks, trade names, trademark registrations, service mark registrations, copyrights, licenses and know-how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures) (collectively, the "Intellectual Property"), necessary for the conduct of their respective businesses as conducted as of the date hereof, except to the extent that the failure to own or possess adequate rights to use such Intellectual Property would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect; neither the Company nor any Subsidiary has received any written

notice of any claim of infringement or conflict which asserted Intellectual Property rights of others, which infringement or conflict, if the subject of an unfavorable decision, would reasonably be expected to result in a Material Adverse Effect; there are no pending, or to the Company's knowledge, threatened judicial proceedings or interference proceedings challenging the Company's or any Subsidiary's rights in or to or the validity of the scope of any of the Company's or any Subsidiary's patents, patent applications or proprietary information, except if such proceedings would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(bb) Environmental Laws. Except as set forth in the Registration Statement or the Prospectus, the Company and the Subsidiaries (i) are in compliance with any and all applicable federal, state, local and foreign laws, rules, regulations, decisions and orders relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants (collectively, "Environmental Laws"); (ii) have received and are in compliance with all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses as described in the Registration Statement and the Prospectus; and (iii) have not received notice of any actual or potential liability for the investigation or remediation of any disposal or release of hazardous or toxic substances or wastes, pollutants or contaminants, except, in the case of any of clauses (i), (ii) or (iii) above, for any such failure to comply or failure to receive required permits, licenses, other approvals or liability as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(cc) Disclosure Controls. The Company maintains systems of internal controls designed to provide reasonable assurance that (i) transactions are executed in accordance with management's general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. The Company is not aware of any material weaknesses in its internal control over financial reporting (other than as set forth in the Prospectus or the Incorporated Documents). Since the date of the latest audited financial statements of the Company included in the Prospectus, there has been no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting (other than as set forth in the Prospectus). The Company has established disclosure controls and procedures (as defined in Exchange Act Rules 13a-15 and 15d-15) for the Company and designed such disclosure controls and procedures to ensure that material information relating to the Company is made known to the certifying officers by others within those entities, particularly during the period in which the Company's Annual Report on Form 10-K or Quarterly Report on Form 10-Q, as the case may be, is being prepared. The Company's certifying officers have evaluated the effectiveness of the Company's disclosure controls and procedures as of a date within 90 days prior to the filing date of the Form 10-K for the fiscal year most recently ended (such date, the "Evaluation Date"). The Company presented in its Form 10-K for the fiscal year most recently ended the conclusions of the certifying officers about the effectiveness of the disclosure controls and procedures based on their evaluations as of the Evaluation Date. Since the Evaluation Date, there have been no significant changes in the

Company's internal controls or, to the Company's knowledge, in other factors that would be reasonably expected to significantly affect the Company's internal controls. To the knowledge of the Company, the Company's "internal controls over financial reporting" and "disclosure controls and procedures" are effective.

(dd) Sarbanes-Oxley. There has been no failure on the part of the Company or, to the Company's knowledge, any of the Company's directors or officers, in their capacities as such, to comply with any applicable provisions of the Sarbanes-Oxley Act and the applicable rules and regulations promulgated thereunder in all material respects. Each of the principal executive officer and the principal financial officer of the Company (or each former principal executive officer of the Company and each former principal financial officer of the Company as applicable) has made all certifications required by Sections 302 and 906 of the Sarbanes-Oxley Act with respect to all reports, schedules, forms, statements and other documents required to be filed by it or furnished by it to the Commission during the 12 months prior to the date of this Agreement. For purposes of the preceding sentence, "principal executive officer" and "principal financial officer" shall have the meanings given to such terms in the Sarbanes-Oxley Act.

(ee) Finder's Fees. Neither the Company nor any Subsidiary has incurred any liability for any finder's fees, brokerage commissions or similar payments in connection with the transactions herein contemplated, except as may otherwise exist with respect to Agent pursuant to this Agreement.

(ff) Labor Disputes. No labor disturbance by or dispute with employees of the Company or any Subsidiary exists or, to the knowledge of the Company, is threatened which would reasonably be expected to have a Material Adverse Effect

(gg) Investment Company Act. Neither the Company or any Subsidiary is or, after giving effect to the offering and sale of the Placement Shares, will be an "investment company" or an entity "controlled" by an "investment company," as such terms are defined in the Investment Company Act of 1940, as amended (the "Investment Company Act").

(hh) Operations. The operations of the Company and the Subsidiaries are and have been conducted at all times in compliance with applicable financial record keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all jurisdictions to which the Company or the Subsidiaries are subject, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the "Money Laundering Laws"), except as would not reasonably be expected to have a Material Adverse Effect; and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any Subsidiary with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

(ii) Off-Balance Sheet Arrangements. There are no transactions, arrangements and other relationships between and/or among the Company, and/or, to the knowledge of the Company, any of its affiliates and any unconsolidated entity, including, but not limited to, any structured finance, special purpose or limited purpose entity (each, an "Off Balance Sheet Transaction") that would reasonably be expected to affect materially the Company's liquidity or the availability of or requirements for its capital resources required to be described in the Prospectus which have not been described as required.

(jj) Other Agreements. The Company is not a party to any agreement with an agent or underwriter for any other “at the market” or continuous equity transaction other than this Agreement.

(kk) ERISA. To the knowledge of the Company, each material employee benefit plan, within the meaning of Section 3(3) of the Employee Retirement Income Security Act of 1974, as amended (“ERISA”), that is maintained, administered or contributed to by the Company or any of its affiliates for employees or former employees of the Company and the Subsidiaries has been maintained in material compliance with its terms and the requirements of any applicable statutes, orders, rules and regulations, including but not limited to ERISA and the Internal Revenue Code of 1986, as amended (the “Code”); no prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code, has occurred which would result in a material liability to the Company with respect to any such plan excluding transactions effected pursuant to a statutory or administrative exemption; and for each such plan that is subject to the funding rules of Section 412 of the Code or Section 302 of ERISA, no “accumulated funding deficiency” as defined in Section 412 of the Code has been incurred, whether or not waived, and the fair market value of the assets of each such plan (excluding for these purposes accrued but unpaid contributions) exceeds the present value of all benefits accrued under such plan determined using reasonable actuarial assumptions.

(ll) Forward Looking Statements. No forward-looking statement (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) (a “Forward Looking Statement”) contained in the Registration Statement and the Prospectus (i) has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith, and (ii) been prepared in accordance with Item 10 of Regulation S-K under the Securities Act.

(mm) Agent Purchases. The Company acknowledges and agrees that Agent has informed the Company that the Agent may, to the extent permitted under the Securities Act and the Exchange Act, purchase and sell Common Stock for its own account while this Agreement is in effect, provided, that (i) no such purchase or sales shall take place while a Placement Notice is in effect (except to the extent the Agent may engage in sales of Placement Shares purchased or deemed purchased from the Company as a “riskless principal” or in a similar capacity) and (ii) the Company shall not be deemed to have authorized or consented to any such purchases or sales by the Agent.

(nn) Margin Rules. Neither the issuance, sale and delivery of the Placement Shares nor the application of the proceeds thereof by the Company as described in the Registration Statement and the Prospectus will violate Regulation T, U or X of the Board of Governors of the Federal Reserve System or any other regulation of such Board of Governors.

(oo) Insurance. The Company and the Subsidiaries carry, or are covered by, insurance in such amounts and covering such risks as the Company and the Subsidiaries reasonably believe is adequate for the conduct of their business and as is customary for companies of similar size engaged in similar businesses in similar industries.

(pp) No Improper Practices. (i) Neither the Company nor, to the Company's knowledge, the Subsidiaries nor any of their respective executive officers has, in the past five years, made any unlawful contributions to any candidate for any political office (or failed fully to disclose any contribution in violation of law) or made any contribution or other payment to any official of, or candidate for, any federal, state, municipal, or foreign office or other person charged with similar public or quasi-public duty in violation of any law or of the character required to be disclosed in the Prospectus; (ii) no relationship, direct or indirect, exists between or among the Company or, to the Company's knowledge, the Subsidiaries or any affiliate of any of them, on the one hand, and the directors, officers and stockholders of the Company or, to the Company's knowledge, the Subsidiaries, on the other hand, that is required by the Securities Act to be described in the Registration Statement and the Prospectus that is not so described; (iii) no relationship, direct or indirect, exists between or among the Company or the Subsidiaries or, to the Company's knowledge, any affiliate of them, on the one hand, and the directors, officers or stockholders of the Company or, to the Company's knowledge, the Subsidiaries, on the other hand, that is required by the rules of FINRA to be described in the Registration Statement and the Prospectus that is not so described; (iv) there are no material outstanding loans or advances or material guarantees of indebtedness by the Company or, to the Company's knowledge, the Subsidiaries to or for the benefit of any of their respective officers or directors or any of the members of the families of any of them; (v) the Company has not offered, or caused any placement agent to offer, Common Stock to any person with the intent to influence unlawfully (A) a customer or supplier of the Company or the Subsidiaries to alter the customer's or supplier's level or type of business with the Company or the Subsidiaries or (B) a trade journalist or publication to write or publish favorable information about the Company or the Subsidiaries or any of their respective products or services, and, (vi) neither the Company nor the Subsidiaries nor, to the Company's knowledge, any employee or agent of the Company or the Subsidiaries has made any payment of funds of the Company or the Subsidiaries or received or retained any funds in violation of any law, rule or regulation (including, without limitation, the Foreign Corrupt Practices Act of 1977), which payment, receipt or retention of funds is of a character required to be disclosed in the Registration Statement or the Prospectus.

(qq) Status Under the Securities Act. The Company was not and is not an ineligible issuer as defined in Rule 405 under the Securities Act at the times specified in Rules 164 and 433 under the Securities Act in connection with the offering of the Placement Shares.

(rr) No Misstatement or Omission in an Issuer Free Writing Prospectus. Each Issuer Free Writing Prospectus, as of its issue date and as of each Applicable Time (as defined below), did not, does not and will not, through the completion of the Placement for which such Issuer Free Writing Prospectus is used or deemed used, include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement or the Prospectus, including any incorporated document deemed to be a part thereof that has not been superseded or modified. The foregoing sentence does not apply to statements in or omissions from any Issuer Free Writing Prospectus based upon and in conformity with written information furnished to the Company by the Agent specifically for use therein.

(ss) No Conflicts. Neither the execution of this Agreement by the Company, nor the issuance, offering or sale of the Placement Shares, nor the consummation of any of the transactions contemplated herein, nor the compliance by the Company with the terms and provisions hereof will conflict with, or will result in a breach of, any of the terms and provisions of, or has constituted or will constitute a default under, or has resulted in or will result in the creation or imposition of any lien, charge or encumbrance upon any property or assets of the Company pursuant to the terms of any contract or other agreement to which the Company may be bound or to which any of the property or assets of the Company is subject, except (i) such conflicts, breaches or defaults as may have been waived and (ii) such conflicts, breaches and defaults that would not reasonably be expected to have a Material Adverse Effect; nor will such action result (x) in any violation of the provisions of the organizational or governing documents of the Company, or (y) in any violation of the provisions of any statute or any order, rule or regulation applicable to the Company or of any court or of any federal, state or other regulatory authority or other government body having jurisdiction over the Company, other than in each case any such conflict, breach or violation that, individually or in the aggregate, which would not reasonably be expected to have a Material Adverse Effect.

(tt) Sanctions. (i) The Company represents that, neither it nor any Subsidiary (collectively, the “Entity”) nor, any director, officer, employee, nor to the Entity’s knowledge, any agent, affiliate or representative of the Entity, is a government, individual, or entity (in this paragraph (uu), “Covered Person”) that is, or is owned or controlled by a Covered Person that is:

(A) the subject of any sanctions administered or enforced by the U.S. Department of Treasury’s Office of Foreign Assets Control (“OFAC”), the United Nations Security Council, the European Union, Her Majesty’s Treasury, or other relevant sanctions authority (collectively, “Sanctions”), nor

(B) located, organized or resident in a country or territory that is the subject of Sanctions administered by OFAC.

(ii) The Entity represents and covenants that it will not, directly or indirectly, use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other Covered Person:

(A) to fund or facilitate any activities or business of or with any Covered Person or in any country or territory that, at the time of such funding or facilitation, is the subject of Sanctions; or

(B) in any other manner that will result in a violation of Sanctions by any Covered Person (including any Covered Person participating in the offering, whether as underwriter, advisor, investor or otherwise).

(iii) The Entity represents and covenants that, except as detailed in the Prospectus, for the past 5 years, it has not knowingly engaged in, is not now knowingly engaged in, and will not knowingly engage in, any dealings or transactions with any Covered Person, or in any country or territory, that at the time of the dealing or transaction is or was the subject of Sanctions.

(uu) Stock Transfer Taxes. On each Settlement Date, all stock transfer or other taxes (other than income taxes) which are required to be paid in connection with the sale and transfer of the Placement Shares to be sold hereunder will be, or will have been, fully paid or provided for by the Company and all laws imposing such taxes will be or will have been fully complied with in all material respects.



(vv) IT Systems. (i)(x) To the knowledge of the Company, there has been no security breach or attack or other compromise of or relating to any of the Company's and its subsidiaries' information technology and computer systems, networks, hardware, software, data (including the data of their respective customers, employees, suppliers, vendors and any third party data maintained by or on behalf of them), equipment or technology ("IT Systems and Data"), except in each case as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, and (y) the Company and its subsidiaries have not been notified of, and have no knowledge of any event or condition that would reasonably be expected to result in any security breach, attack or compromise to their IT Systems and Data, (ii) the Company and each of its subsidiaries have complied, and are presently in compliance with, all applicable laws, statutes or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority and all industry guidelines, standards, internal policies and contractual obligations relating to the privacy and security of IT Systems and Data and to the protection of such IT Systems and Data from unauthorized use, access, misappropriation or modification and (iii) the Company and each of its subsidiaries have implemented backup and disaster recovery technology consistent with industry standards and practice.

Any certificate signed by an officer of the Company and delivered to the Agent or to counsel for the Agent pursuant to or by the express terms of this Agreement shall be deemed to be a representation and warranty by the Company, as applicable, to the Agent as to the matters set forth therein.

7. Covenants of the Company. The Company covenants and agrees with Agent that:

(a) Registration Statement Amendments. After the date of this Agreement and during any period in which a Prospectus relating to any Placement Shares is required to be delivered by Agent under the Securities Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), (i) the Company will notify the Agent promptly of the time when any subsequent amendment to the Registration Statement, other than through Incorporated Documents or amendments or supplements not related to any Placement, has been filed with the Commission and/or has become effective or any subsequent supplement to the Prospectus has been filed and of any request by the Commission for any amendment or supplement to the Registration Statement or Prospectus or for additional information related to the transactions contemplated by this Agreement, (ii) the Company will prepare and file with the Commission, promptly upon the Agent's reasonable request, any amendments or supplements to the Registration Statement or Prospectus that, in the Agent's reasonable opinion, may be necessary or advisable in connection with the distribution of the Placement Shares by the Agent (provided, however, that the failure of the Agent to make such request shall not relieve the Company of any obligation or liability hereunder, or affect the Agent's right to rely on the representations and warranties made by the Company in this Agreement and provided, further, that the only remedy the Agent shall have with respect to the failure to make such filing shall be to cease making sales under this Agreement until such amendment or supplement is filed); (iii) the Company will not file any amendment or supplement to the Registration Statement or Prospectus, other than documents incorporated by reference, relating to

the Placement Shares or a security convertible into the Placement Shares unless a copy thereof has been submitted to Agent within a reasonable period of time before the filing and the Agent has not reasonably objected thereto in writing within two (2) Business Days (provided, however, that (A) the failure of the Agent to make such objection shall not relieve the Company of any obligation or liability hereunder, or affect the Agent's right to rely on the representations and warranties made by the Company in this Agreement and (B) the Company has no obligation to provide the Agent any advance copy of such filing or to provide Agent an opportunity to object to such filing if the filing does not name the Agent or does not relate to the transactions contemplated by this Agreement; and provided, further, that the only remedy Agent shall have with respect to the failure by the Company to obtain such consent shall be to cease making sales under this Agreement) and the Company will furnish to the Agent at the time of filing thereof a copy of any document that upon filing is deemed to be incorporated by reference into the Registration Statement or Prospectus, except for those documents available via EDGAR; and (iv) the Company will cause each amendment or supplement to the Prospectus to be filed with the Commission as required pursuant to the applicable paragraph of Rule 424(b) of the Securities Act or, in the case of any document to be incorporated therein by reference, to be filed with the Commission as required pursuant to the Exchange Act, within the time period prescribed (the determination to file or not file any amendment or supplement with the Commission under this Section 7(a), based on the Company's reasonable opinion or reasonable objections, shall be made exclusively by the Company).

(b) Notice of Commission Stop Orders. The Company will advise the Agent, promptly after it receives notice or obtains knowledge thereof, of the issuance or threatened issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement, of the suspension of the qualification of the Placement Shares for offering or sale in any jurisdiction, or of the initiation or threatening of any proceeding for any such purpose; and it will promptly use its commercially reasonable efforts to prevent the issuance of any stop order or to obtain its withdrawal if such a stop order should be issued. The Company will advise the Agent promptly after it receives any request by the Commission for any amendments to the Registration Statement or any amendment or supplements to the Prospectus or any Issuer Free Writing Prospectus or for additional information related to the offering of the Placement Shares or for additional information related to the Registration Statement, the Prospectus or any Issuer Free Writing Prospectus.

(c) Delivery of Prospectus; Subsequent Changes. During any period in which a Prospectus relating to the Placement Shares is required to be delivered by the Agent under the Securities Act with respect to the offer and sale of the Placement Shares, (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company will use its commercially reasonable efforts to comply with all requirements imposed upon it by the Securities Act, as from time to time in force, and to file on or before their respective due dates (taking into account any extensions available under the Exchange Act) all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Sections 13(a), 13(c), 14, 15(d) or any other provision of or under the Exchange Act. If the Company has omitted any information from the Registration Statement pursuant to Rule 430B under the Securities Act, it will use commercially reasonable efforts to comply with the provisions of and make all requisite filings with the Commission pursuant to said Rule 430B and to notify the Agent promptly of all such filings if not available on EDGAR. If

during such period any event occurs as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend or supplement the Registration Statement or Prospectus to comply with the Securities Act, the Company will promptly notify Agent to suspend the offering of Placement Shares during such period and the Company will promptly amend or supplement the Registration Statement or Prospectus (at the expense of the Company) so as to correct such statement or omission or effect such compliance; provided, however, that the Company may delay the filing of any amendment or supplement, if in the judgment of the Company, it is in the best interests of the Company.

(d) Listing of Placement Shares. During any period in which the Prospectus relating to the Placement Shares is required to be delivered by the Agent under the Securities Act with respect to the offer and sale of the Placement Shares, the Company will use commercially reasonable efforts to cause the Placement Shares to be listed on the Exchange.

(e) Delivery of Registration Statement and Prospectus. The Company will furnish to the Agent and its counsel (at the reasonable expense of the Company) copies of the Registration Statement, the Prospectus (including all documents incorporated by reference therein) and all amendments and supplements to the Registration Statement or Prospectus that are filed with the Commission during any period in which a Prospectus relating to the Placement Shares is required to be delivered under the Securities Act (including all documents filed with the Commission during such period that are deemed to be incorporated by reference therein), in each case as soon as reasonably practicable and in such quantities as the Agent may from time to time reasonably request and, at Agent's reasonable request, will also furnish copies of the Prospectus to each exchange or market on which sales of the Placement Shares may be made; provided, however, that the Company shall not be required to furnish any document (other than the Prospectus) to the Agent or its counsel to the extent such document is available on EDGAR.

(f) Earnings Statement. The Company will make generally available to its security holders as soon as practicable, but in any event not later than 15 months after the end of the Company's current fiscal quarter, an earnings statement covering a 12-month period that satisfies the provisions of Section 11(a) of the Securities Act and Rule 158 under the Securities Act, provided that the Company will be deemed to have furnished such statements to its security holders to the extent they are filed with the Commission on EDGAR.

(g) Use of Proceeds. The Company will use the Net Proceeds as described in the Prospectus in the section entitled "Use of Proceeds."

(h) Notice of Other Sales. Without prior written notice to Agent, the Company will not, (A) directly or indirectly, offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of any Common Stock (other than the Placement Shares offered pursuant to this Agreement) or securities convertible into or exchangeable for Common Stock, warrants or any rights to purchase or acquire, Common Stock during the period beginning on the date on which any Placement Notice is delivered to Agent hereunder and ending on the second (2<sup>nd</sup>) Trading Day immediately following the final Settlement Date with respect to Placement Shares sold pursuant to such Placement Notice (or, if the Placement Notice has been terminated or suspended prior to

the sale of all Placement Shares covered by a Placement Notice, the date of such suspension or termination); and (B) directly or indirectly in any other “at the market” or continuous equity transaction offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of any Common Stock (other than the Placement Shares offered pursuant to this Agreement) or securities convertible into or exchangeable for Common Stock, warrants or any rights to purchase or acquire, Common Stock prior to the termination of this Agreement; provided, however, that such restrictions will not apply in connection with the Company’s issuance, grant or sale of (i) Common Stock, restricted stock units, options to purchase Common Stock or Common Stock issuable upon the exercise of options, or the vesting of any of the foregoing, pursuant to any stock option or benefits plan, stock ownership plan or dividend reinvestment plan (but not Common Stock subject to a waiver to exceed plan limits in its dividend reinvestment plan) of the Company whether now in effect or hereafter implemented, (ii) Common Stock issuable upon conversion of securities or the exercise of warrants, options, convertible notes or other rights in effect or outstanding, and disclosed in filings by the Company available on EDGAR or otherwise in writing to the Agent and (iii) Common Stock or securities convertible into or exchangeable for shares of Common Stock issued in privately negotiated transactions to vendors, customers or other commercial or strategic partners or potential commercial or strategic partners, as consideration for mergers, acquisitions, other business combinations or strategic alliances occurring after the date of this Agreement which are not issued for capital raising purposes.

(i) Change of Circumstances. The Company will, at any time during the pendency of a Placement Notice advise the Agent promptly after it shall have received notice or obtained knowledge thereof, of any information or fact that would alter or affect in any material respect any opinion, certificate, letter or other document required to be provided to the Agent pursuant to this Agreement.

(j) Due Diligence Cooperation. During the term of this Agreement, the Company will cooperate with any reasonable due diligence review conducted by the Agent or its representatives in connection with the transactions contemplated hereby, including, without limitation, providing information and making available documents and senior corporate officers, during regular business hours and at the Company’s principal offices, as the Agent may reasonably request.

(k) Required Filings Relating to Placement of Placement Shares. The Company agrees that on such dates as the Securities Act shall require with respect to the Placement Shares, the Company will (i) file a prospectus supplement with the Commission under the applicable paragraph of Rule 424(b) under the Securities Act (each and every filing under Rule 424(b), a “Filing Date”), which prospectus supplement will set forth, within the relevant period, the amount of Placement Shares sold through the Agent, the Net Proceeds to the Company and the compensation payable by the Company to the Agent with respect to such Placement Shares, and (ii) deliver such number of copies of each such prospectus supplement to each exchange or market on which such sales were effected as may be required by the rules or regulations of such exchange or market.

(l) Representation Dates; Certificate. On or prior to the date of the first Placement Notice delivered by the Company to the Agent (such date, the “First Placement Date”) and each time the Company:

- (i) amends or supplements (other than a prospectus supplement relating solely to an offering of securities other than the Placement Shares) the Registration Statement or the Prospectus relating to the Placement Shares by means of a post-effective amendment, sticker, or supplement but not by means of incorporation of documents by reference into the Registration Statement or the Prospectus relating to the Placement Shares;
  - (ii) files an annual report on Form 10-K under the Exchange Act (including any Form 10-K/A containing amended financial information or a material amendment to the previously filed Form 10-K);
  - (iii) files a quarterly report on Form 10-Q under the Exchange Act; or
  - (iv) files a current report on Form 8-K containing amended financial information (other than information “furnished” pursuant to Items 2.02 or 7.01 of Form 8-K or to provide disclosure pursuant to Item 8.01 of Form 8-K relating to the reclassification of certain properties as discontinued operations in accordance with Statement of Financial Accounting Standards No. 144) under the Exchange Act;
- (each date of filing of one or more of the documents referred to in clauses (i) through (iv) shall be a “Representation Date.”)

the Company shall furnish the Agent (but in the case of clause (iv) above only if the Agent reasonably determines that the information contained in such Form 8-K is material) with a certificate dated the Representation Date, in the form attached hereto as Exhibit 7(l). The requirement to provide a certificate under this Section 7(l) shall be waived for any Representation Date occurring at a time at which no Placement Notice is pending, which waiver shall continue until the earlier to occur of the date the Company delivers a Placement Notice hereunder (which for such calendar quarter shall be considered a Representation Date) and the next occurring Representation Date; provided, however, that such waiver shall not apply for any Representation Date on which the Company files its annual report on Form 10-K. Notwithstanding the foregoing, if the Company subsequently decides to sell Placement Shares following a Representation Date when the Company relied on such waiver and did not provide the Agent with a certificate under this Section 7(l), then before the Company delivers the Placement Notice or the Agent sells any Placement Shares, the Company shall provide the Agent with a certificate, in the form attached hereto as Exhibit 7(l), dated the date of the Placement Notice.

(m) Legal Opinion and Negative Assurance Letter. (1) On or before the First Placement Date, the Company shall cause to be furnished to the Agent a written opinion and negative assurance letter of Orrick, Herrington & Sutcliffe LLP (“Company Counsel”), or other counsel reasonably satisfactory to the Agent, each in form and substance reasonably satisfactory to Agent and its counsel; and (2) within five (5) Trading Days of each Representation Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(l) for which no waiver is applicable, the Company shall cause to be furnished to the Agent a negative assurance letter of Company Counsel, or other counsel reasonably satisfactory to the Agent, in form and substance reasonably satisfactory to Agent and its counsel; *provided, however*, the Company shall not be required to furnish to Agent more than one written opinion and negative assurance letter per calendar quarter; provided, further, that in lieu of such opinions for

subsequent periodic filings under the Exchange Act, counsel may furnish the Agent with a letter (a “Reliance Letter”) to the effect that the Agent may rely on a prior opinion delivered under this Section 7(n) to the same extent as if it were dated the date of such letter (except that statements in such prior opinion shall be deemed to relate to the Registration Statement and the Prospectus as amended or supplemented as of the date of the Reliance Letter).

(n) Comfort Letter. (1) On or before the First Placement Date and (2) within five (5) Trading Days of each Representation Date, other than pursuant to Section 7(l)(iii), with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(l) for which no waiver is applicable, the Company shall cause its independent accountants to furnish the Agent letters (the “Comfort Letters”), dated the date the Comfort Letter is delivered, which shall meet the requirements set forth in this Section 7(n). The Comfort Letter from the Company’s independent accountants shall be in a form and substance reasonably satisfactory to the Agent, (i) confirming that they are an independent public accounting firm within the meaning of the Securities Act and the Public Company Accounting Oversight Board, (ii) stating, as of such date, the conclusions and findings of such firm with respect to the financial information and other matters ordinarily covered by accountants’ “comfort letters” to underwriters in connection with registered public offerings (the first such letter, the “Initial Comfort Letter”) and (iii) updating the Initial Comfort Letter with any information that would have been included in the Initial Comfort Letter had it been given on such date and modified as necessary to relate to the Registration Statement and the Prospectus, as amended and supplemented to the date of such letter.

(o) Market Activities. The Company will not, directly or indirectly, (i) take any action designed to cause or result in, or that constitutes or would reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of Common Stock or (ii) sell, bid for, or purchase Common Stock in violation of Regulation M, or pay anyone any compensation for soliciting purchases of the Placement Shares other than the Agent; provided, however, that the Company may bid for and purchase shares of its Common Stock in accordance with Rule 10b-18 under the Exchange Act.

(p) Investment Company Act. The Company will conduct its affairs in such a manner so as to reasonably ensure that neither it nor the Subsidiaries will be or become, at any time prior to the termination of this Agreement, an “investment company,” as such term is defined in the Investment Company Act, assuming no change in the Commission’s current interpretation as to entities that are not considered an investment company.

(q) No Offer to Sell. Other than the Prospectus and the Issuer Free Writing Prospectus approved in advance by the Company and the Agent in its capacity as agent hereunder, neither the Agent nor the Company (including its agents and representatives, other than the Agent in its capacity as such) will make, use, prepare, authorize, approve or refer to any written communication (as defined in Rule 405 under the Securities Act), required to be filed with the Commission, that constitutes an offer to sell or solicitation of an offer to buy Placement Shares hereunder.

(r) Blue Sky and Other Qualifications. The Company will use its commercially reasonable efforts, in cooperation with the Agent, to qualify the Placement Shares for offering and sale, or to obtain an exemption for the Placement Shares to be offered and sold, under the applicable securities laws of such states and other jurisdictions (domestic or foreign) as the Agent may designate and to maintain such qualifications and exemptions in effect for so long as required for the distribution of the Placement Shares (but in no event for less than one year from the date of this Agreement); *provided, however*, that the Company shall not be obligated to file any general consent to service of process or to qualify as a foreign corporation or as a dealer in securities in any jurisdiction in which it is not so qualified or to subject itself to taxation in respect of doing business in any jurisdiction in which it is not otherwise so subject. In each jurisdiction in which the Placement Shares have been so qualified or exempt, the Company will file such statements and reports as may be required by the laws of such jurisdiction to continue such qualification or exemption, as the case may be, in effect for so long as required for the distribution of the Placement Shares (but in no event for less than one year from the date of this Agreement).

(s) Sarbanes-Oxley Act. The Company will maintain and keep accurate books and records reflecting its assets and maintain internal accounting controls in a manner designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and including those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company, (ii) provide reasonable assurance that transactions are recorded as necessary to permit the preparation of the Company's financial statements in accordance with generally accepted accounting principles, (iii) that receipts and expenditures of the Company are being made only in accordance with management's and the Company's directors' authorization, and (iv) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on its financial statements. The Company will maintain such controls and other procedures, including, without limitation, those required by Sections 302 and 906 of the Sarbanes-Oxley Act, and the applicable regulations thereunder that are designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Commission's rules and forms, including, without limitation, controls and procedures designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company's management, including its principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure and to ensure that material information relating to the Company is made known to it by others within the organization, particularly during the period in which such periodic reports are being prepared.

8. Payment of Expenses. The Company will pay all expenses incident to the performance of its obligations under this Agreement, including (i) the preparation, filing, including any fees required by the Commission, and printing of the Registration Statement (including financial statements and exhibits) as originally filed and of each amendment and supplement thereto, in such number as the Agent shall reasonably deem necessary, (ii) the printing and delivery to the Agent of this Agreement and such other documents as may be required in connection with the offering, purchase, sale, issuance or delivery of the Placement Shares, (iii) the fees and disbursements of the counsel, accountants and other advisors to the Company, (iv) the reasonable and documented out-of-pocket expenses of Agent, including reasonable and documented fees and

disbursements of counsel to the Agent incurred in connection with (a) entering into the transactions contemplated by this Agreement in an amount not to exceed \$50,000 in the aggregate, and (b) ongoing diligence arising from the transactions contemplated by this Agreement in an amount not to exceed \$10,000 in the aggregate; (v) the printing and delivery to the Agent of copies of any Permitted Issuer Free Writing Prospectus (defined below) and the Prospectus and any amendments or supplements thereto in such number as the Agent shall deem reasonably necessary, (vi) the preparation, printing and delivery to the Agent of copies of the blue sky survey, (vii) the documented fees and expenses of the transfer agent and registrar for the Common Stock, (viii) the reasonable and documented fees and expenses incident to any review by FINRA of the terms of the sale of the Placement Shares, including fees and expenses of counsel to the Agent, and (ix) the documented fees and expenses incurred in connection with the listing of the Placement Shares on the Exchange.

9. Conditions to the Agent's Obligations. The obligations of the Agent hereunder with respect to a Placement will be subject to the continuing accuracy and completeness of the representations and warranties made by the Company herein, to the due performance by the Company of its obligations hereunder, to the completion by the Agent of a due diligence review satisfactory to it in its reasonable judgment, and to the continuing reasonable satisfaction (or waiver by the Agent in its sole discretion) of the following additional conditions:

(a) Registration Statement Effective. The Registration Statement shall have become effective and shall be available for the sale of all Placement Shares contemplated to be issued by any Placement Notice.

(b) No Material Notices. None of the following events shall have occurred and be continuing: (i) receipt by the Company of any request for additional information from the Commission or any other federal or state governmental authority during the period of effectiveness of the Registration Statement, the response to which would require any post-effective amendments or supplements to the Registration Statement or the Prospectus; (ii) the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of the Registration Statement or the initiation of any proceedings for that purpose; (iii) receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Placement Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose; or (iv) the occurrence of any event that makes any statement of material fact made in the Registration Statement or the Prospectus or any material document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires the making of any changes in the Registration Statement, the Prospectus or Incorporated Documents so that, in the case of the Registration Statement, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading and, that in the case of the Prospectus, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(c) No Misstatement or Material Omission. The Agent shall not have advised the Company that the Registration Statement or Prospectus, or any amendment or supplement thereto, contains an untrue statement of fact that in the Agent's reasonable opinion, in consultation with outside counsel, is material, or omits to state a fact that in the Agent's reasonable opinion is material and is required to be stated therein or is necessary to make the statements therein not misleading.



(d) Material Changes. Except as contemplated in the Prospectus, or disclosed in the Company's reports filed with the Commission, there shall not have been any Material Adverse Effect, or any development that would reasonably be expected to cause a Material Adverse Effect, or a downgrading in or withdrawal of the rating assigned to any of the Company's securities (other than asset backed securities) by any rating organization or a public announcement by any rating organization that it has under surveillance or review its rating of any of the Company's securities (other than asset backed securities), the effect of which, in the case of any such action by a rating organization described above, in the reasonable judgment of the Agent (without relieving the Company of any obligation or liability it may otherwise have), is so material as to make it impracticable or inadvisable to proceed with the offering of the Placement Shares on the terms and in the manner contemplated in the Prospectus.

(e) Legal Opinion. The Agent shall have received the opinion and the negative assurance letter of Company Counsel required to be delivered pursuant to Section 7(m) on or before the date on which such delivery of such opinion and letter, as applicable, is required pursuant to Section 7(m).

(f) Comfort Letter. The Agent shall have received the Comfort Letter required to be delivered pursuant to Section 7(n) on or before the date on which such delivery of such Comfort Letter is required pursuant to Section 7(n).

(g) Representation Certificate. The Agent shall have received the certificate required to be delivered pursuant to Section 7(l) on or before the date on which delivery of such certificate is required pursuant to Section 7(l).

(h) Secretary's Certificate. On or prior to the first Representation Date, the Agent shall have received a certificate, signed on behalf of the Company by its corporate Secretary, in form and substance satisfactory to the Agent and its counsel.

(i) No Suspension. Trading in the Common Stock shall not have been suspended on the Exchange, and the Common Stock shall not have been delisted from the Exchange.

(j) Other Materials. On each date on which the Company is required to deliver a certificate pursuant to Section 7(l), the Company shall have furnished to the Agent such appropriate further information, certificates and documents as the Agent may reasonably request. All such opinions, certificates, letters and other documents will be in compliance with the provisions hereof. The Company will furnish the Agent with such conformed copies of such opinions, certificates, letters and other documents as the Agent shall reasonably request.

(k) Securities Act Filings Made. All filings with the Commission required by Rule 424 under the Securities Act with respect to the Placement Shares to have been filed prior to the issuance of any Placement Notice hereunder shall have been made within the applicable time period prescribed for such filing by Rule 424.

(l) Approval for Listing. The Placement Shares shall either have been approved for listing on the Exchange, subject only to notice of issuance, or the Company shall have filed an application for listing of the Placement Shares on the Exchange at, or prior to, the issuance of any Placement Notice.

(m) FINRA. FINRA shall have raised no objection to the terms of this offering and the amount of compensation allowable or payable to the Agent as described in the Prospectus.

(n) No Termination Event. There shall not have occurred any event that would permit the Agent to terminate this Agreement pursuant to Section 12(a).

#### 10. Indemnification and Contribution.

(a) Company Indemnification. The Company agrees to indemnify and hold harmless the Agent, its partners, members, directors, officers, employees and agents and each person, if any, who controls the Agent within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act as follows:

(i) against any and all loss, liability, claim, damage and expense whatsoever, as incurred, joint or several, arising out of or based upon any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement (or any amendment thereto), or the omission or alleged omission therefrom of a material fact required to be stated therein or necessary to make the statements therein not misleading, or arising out of any untrue statement or alleged untrue statement of a material fact included in any related Issuer Free Writing Prospectus or the Prospectus (or any amendment or supplement thereto), or the omission or alleged omission therefrom of a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading;

(ii) against any and all loss, liability, claim, damage and expense whatsoever, as incurred, joint or several, to the extent of the aggregate amount paid in settlement of any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, or of any claim whatsoever based upon any such untrue statement or omission, or any such alleged untrue statement or omission; provided that (subject to Section 10(d) below) any such settlement is effected with the written consent of the Company, which consent shall not unreasonably be delayed or withheld; and

(iii) against any and all expense whatsoever, as incurred (including the reasonable and documented fees and disbursements of counsel), reasonably incurred in investigating, preparing or defending against any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, or any claim whatsoever based upon any such untrue statement or omission, or any such alleged untrue statement or omission, of the Company to the extent that any such expense is not paid under (i) or (ii) above,

provided, however, that this indemnity agreement shall not apply to any loss, liability, claim, damage or expense to the extent arising out of any untrue statement or omission or alleged untrue statement or omission made solely in reliance upon and in conformity with written information furnished to the Company by the Agent expressly for use in the Registration Statement (or any amendment thereto), or in any related Issuer Free Writing Prospectus or the Prospectus (or any amendment or supplement thereto).

(b) Agent Indemnification. Agent agrees to indemnify and hold harmless the Company and its directors and each officer of the Company who signed the Registration Statement, and each person, if any, who (i) controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act or (ii) is controlled by or is under common control with the Company against any and all loss, liability, claim, damage and expense described in the indemnity contained in Section 10(a), as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions, made in the Registration Statement (or any amendments thereto) or the Prospectus (or any amendment or supplement thereto) in reliance upon and in conformity with information relating to the Agent and furnished to the Company in writing by the Agent expressly for use therein.

(c) Procedure. Any party that proposes to assert the right to be indemnified under this Section 10 will, promptly after receipt of notice of commencement of any action against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section 10, notify each such indemnifying party of the commencement of such action, enclosing a copy of all papers served, but the omission so to notify such indemnifying party will not relieve the indemnifying party from (i) any liability that it may have to any indemnified party otherwise than under this Section 10 and (ii) any liability that it may have to any indemnified party under the foregoing provision of this Section 10 unless, and only to the extent that, such omission results in the forfeiture of substantive rights or defenses by the indemnifying party. If any such action is brought against any indemnified party and it notifies the indemnifying party of its commencement, the indemnifying party will be entitled to participate in and, to the extent that it elects by delivering written notice to the indemnified party promptly after receiving notice of the commencement of the action from the indemnified party, jointly with any other indemnifying party similarly notified, to assume the defense of the action, with counsel reasonably satisfactory to the indemnified party, and after notice from the indemnifying party to the indemnified party of its election to assume the defense, the indemnifying party will not be liable to the indemnified party for any legal or other expenses except as provided below and except for the reasonable and documented costs of investigation subsequently incurred by the indemnified party in connection with the defense. The indemnified party will have the right to employ its own counsel in any such action, but the fees, expenses and other charges of such counsel will be at the expense of such indemnified party unless (1) the employment of counsel by the indemnified party has been authorized in writing by the indemnifying party, (2) the indemnified party has reasonably concluded (based on advice of counsel) that there may be legal defenses available to it or other indemnified parties that are different from or in addition to those available to the indemnifying party, (3) a conflict or potential conflict exists (based on advice of counsel to the indemnified party) between the indemnified party and the indemnifying party (in which case the indemnifying party will not have the right to direct the defense of such action on behalf of the indemnified party) or (4) the indemnifying party has not in fact employed counsel to assume the defense of such action within a reasonable time after receiving notice of the commencement of the action, in each of which cases the reasonable and documented fees, disbursements and other charges of counsel will be at the expense of the indemnifying party or parties. It is understood that the indemnifying party or parties shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the reasonable fees, disbursements and other charges of more than one

separate firm admitted to practice in such jurisdiction at any one time for all such indemnified party or parties. All such fees, disbursements and other charges will be reimbursed by the indemnifying party promptly after the indemnifying party receives a written invoice related to fees, disbursements and other reasonable charges in detail. An indemnifying party will not, in any event, be liable for any settlement of any action or claim effected without its written consent. No indemnifying party shall, without the prior written consent of each indemnified party, settle or compromise or consent to the entry of any judgment in any pending or threatened claim, action or proceeding relating to the matters contemplated by this Section 10 (whether or not any indemnified party is a party thereto), unless such settlement, compromise or consent (1) includes an unconditional release of each indemnified party from all liability arising out of such litigation, investigation, proceeding or claim and (2) does not include a statement as to or an admission of fault, culpability or a failure to act by or on behalf of any indemnified party.

(d) Contribution. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in the foregoing paragraphs of this Section 10 is applicable in accordance with its terms but for any reason is held to be unavailable from the Company or the Agent, the Company and the Agent will contribute to the total losses, claims, liabilities, expenses and damages (including any investigative, legal and other expenses reasonably incurred and documented in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted, but after deducting any contribution received by the Company from persons other than the Agent, such as persons who control the Company within the meaning of the Securities Act, officers of the Company who signed the Registration Statement and directors of the Company, who also may be liable for contribution) to which the Company and the Agent may be subject in such proportion as shall be appropriate to reflect the relative benefits received by the Company on the one hand and the Agent on the other hand. The relative benefits received by the Company on the one hand and the Agent on the other hand shall be deemed to be in the same proportion as the total net proceeds from the sale of the Placement Shares (before deducting expenses) received by the Company bear to the total compensation received by the Agent (before deducting expenses) from the sale of Placement Shares on behalf of the Company. If, but only if, the allocation provided by the foregoing sentence is not permitted by applicable law, the allocation of contribution shall be made in such proportion as is appropriate to reflect not only the relative benefits referred to in the foregoing sentence but also the relative fault of the Company, on the one hand, and the Agent, on the other hand, with respect to the statements or omission that resulted in such loss, claim, liability, expense or damage, or action in respect thereof, as well as any other relevant equitable considerations with respect to such offering. Such relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or the Agent, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Agent agree that it would not be just and equitable if contributions pursuant to this Section 10(d) were to be determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, liability, expense, or damage, or action in respect thereof, referred to above in this Section 10(d) shall be deemed to include, for the purpose of this Section 10(d), any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim to the extent consistent with Section 10(c) hereof. Notwithstanding the foregoing provisions of this

Section 10(d), the Agent shall not be required to contribute any amount in excess of the commissions received by it under this Agreement and no person found guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 10(d), any person who controls a party to this Agreement within the meaning of the Securities Act, and any officers, directors, partners, employees or agents of the Agent, will have the same rights to contribution as that party, and each director of the Company and each officer of the Company who signed the Registration Statement will have the same rights to contribution as the Company, subject in each case to the provisions hereof. Any party entitled to contribution, promptly after receipt of notice of commencement of any action against such party in respect of which a claim for contribution may be made under this Section 10(d), will notify any such party or parties from whom contribution may be sought, but the omission to so notify will not relieve that party or parties from whom contribution may be sought from any other obligation it or they may have under this Section 10(d) except to the extent that the failure to so notify such other party materially prejudiced the substantive rights or defenses of the party from whom contribution is sought. Except for a settlement entered into pursuant to the last sentence of Section 10(c) hereof, no party will be liable for contribution with respect to any action or claim settled without its written consent if such consent is required pursuant to Section 10(c) hereof.

#### 11. Additional Covenants.

(a) Representations and Covenants of the Agent. The Agent represents and warrants that it is duly registered as a broker-dealer under FINRA, the Exchange Act and the applicable statutes and regulations of each state in which the Placement Shares will be offered and sold, except such states in which the Agent is exempt from registration or such registration is not otherwise required. The Agent shall continue, for the term of this Agreement, to be duly registered as a broker-dealer under FINRA, the Exchange Act and the applicable statutes and regulations of each state in which the Placement Shares will be offered and sold, except such states in which the Agent is exempt from registration or such registration is not otherwise required, during the term of this Agreement. The Agent shall comply with all applicable law and regulations in connection with the transactions contemplated by this Agreement, including the issuance and sale through the Agent of the Placement Shares

(b) Representations and Agreements to Survive Delivery. The indemnity and contribution agreements contained in Section 10 of this Agreement and all representations and warranties of the Company herein or in certificates delivered pursuant hereto shall survive, as of their respective dates, regardless of (i) any investigation made by or on behalf of the Agent, any controlling persons, or the Company (or any of their respective officers, directors or controlling persons), (ii) delivery and acceptance of the Placement Shares and payment therefor or (iii) any termination of this Agreement.

#### 12. Termination.

(a) The Agent may terminate this Agreement, by written notice to the Company, as hereinafter specified at any time (1) if there has been, since the time of execution of this Agreement or since the date as of which information is given in the Prospectus, any Material Adverse Effect, or any development that would reasonably be expected to result in a Material

Adverse Effect has occurred, which in the reasonable judgment of the Agent, is material and adverse and makes it impractical or inadvisable to market the Placement Shares, (2) if there has occurred any material adverse change in the financial markets in the United States or the international financial markets, any outbreak of hostilities or escalation thereof or other calamity or crisis or any change or development involving a prospective change in national or international political, financial or economic conditions, in each case the effect of which is such as to make it, in the judgment of the Agent, impracticable or inadvisable to market the Placement Shares or to enforce contracts for the sale of the Placement Shares, (3) if trading in the Common Stock has been suspended or limited by the Commission or the Exchange, or if trading generally on the Exchange has been suspended or limited, or minimum prices for trading have been fixed on the Exchange, (4) if any suspension of trading of any securities of the Company on any exchange or in the over-the-counter market shall have occurred and be continuing, (5) if a major disruption of securities settlements or clearance services in the United States shall have occurred and be continuing, or (6) if a banking moratorium has been declared by either U.S. Federal or New York authorities. Any such termination shall be without liability of any party to any other party except that the provisions of Section 8 (Expenses), Section 10 (Indemnification), Section 11 (Survival of Representations), Section 17 (Governing Law; Consent to Jurisdiction) and Section 18 (Waiver of Jury Trial) hereof shall remain in full force and effect notwithstanding such termination. If the Agent elects to terminate this Agreement as provided in this Section 12(a), the Agent shall provide the required written notice as specified in Section 13 (Notices).

(b) The Company shall have the right, by giving ten (10) days written notice as hereinafter specified, to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 8, Section 10, Section 11, Section 17 and Section 18 hereof shall remain in full force and effect notwithstanding such termination.

(c) The Agent shall have the right, by giving ten (10) days written notice as hereinafter specified to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 8, Section 10, Section 11, Section 17 and Section 18 hereof shall remain in full force and effect notwithstanding such termination.

(d) Unless earlier terminated pursuant to this Section 12, this Agreement shall automatically terminate upon the issuance and sale of all of the Placement Shares through the Agent on the terms and subject to the conditions set forth herein; provided that the provisions of Section 8, Section 10, Section 11, Section 17 and Section 18 hereof shall remain in full force and effect notwithstanding such termination.

(e) This Agreement shall remain in full force and effect unless terminated pursuant to Sections 12(a), (b), (c), or (d) above or otherwise by mutual agreement of the parties; provided, however, that any such termination by mutual agreement shall in all cases be deemed to provide that Section 8, Section 10, Section 11, Section 17 and Section 18 shall remain in full force and effect.

(f) Any termination of this Agreement shall be effective on the date specified in such notice of termination; provided, however, that such termination shall not be effective until

the close of business on the date of receipt of such notice by the Agent or the Company, as the case may be; provided, further, any termination of this Agreement in accordance with the terms of Section 12(b) or (c) shall not be effective until the date that is ten days after the date of such written notice. If such termination shall occur prior to the Settlement Date for any sale of Placement Shares, such Placement Shares shall settle in accordance with the provisions of this Agreement.

(g) Subject to the additional limitations set forth in Section 8 of this Agreement, in the event of termination of this Agreement prior to the sale of any Placement Shares, the Agent shall be entitled only to reimbursement of its out-of-pocket expenses actually incurred.

13. Notices. All notices or other communications required or permitted to be given by any party to any other party pursuant to the terms of this Agreement shall be in writing, unless otherwise specified, and if sent to the Agent, shall be delivered to:

JonesTrading Institutional Services LLC  
900 Island Park Drive, Suite 160  
Daniel Island, SC 29492  
Attn: Burke Cook  
Email: burke@jonestrading.com

and

Duane Morris, LLP  
1540 Broadway  
New York, NY 10036  
Attn: Dean M. Colucci  
Email: DMColucci@duanemorris.com

and if to the Company, shall be delivered to:

HCW Biologics Inc.  
2929 North Commerce Parkway  
Miramar, Florida 33025  
Attention: Nicole Valdivieso  
Email: nicolevaldivieso@hcwbiologics.com

with a copy to:

Orrick, Herrington & Sutcliffe LLP  
405 Howard Street  
San Francisco, CA 94105  
Attention: William Hughes, Esq.  
Email: whughes@orrick.com

Each party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose. Each such notice or other

communication shall be deemed given (i) when delivered personally or by verifiable facsimile transmission (with an original to follow) on or before 4:30 p.m., New York City time, on a Business Day (as defined below) or, if such day is not a Business Day, on the next succeeding Business Day, (ii) on the next Business Day after timely delivery to a nationally-recognized overnight courier and (iii) on the Business Day actually received if deposited in the U.S. mail (certified or registered mail, return receipt requested, postage prepaid).

An electronic communication ("Electronic Notice") shall be deemed written notice for purposes of this Section 13 if sent to the electronic mail address specified by the receiving party under separate cover. Electronic Notice shall be deemed received at the time the party sending Electronic Notice receives verification of receipt by the receiving party. Any party receiving Electronic Notice may request and shall be entitled to receive the notice on paper, in a nonelectronic form ("Nonelectronic Notice") which shall be sent to the requesting party within ten (10) days of receipt of the written request for Nonelectronic Notice.

14. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the Company and the Agent and their respective successors and the affiliates, controlling persons, officers and directors referred to in Section 10 hereof. References to any of the parties contained in this Agreement shall be deemed to include the successors and permitted assigns of such party. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and permitted assigns any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement. Neither party may assign its rights or obligations under this Agreement without the prior written consent of the other party; provided, however, that the Agent may assign its rights and obligations hereunder to an affiliate thereof without obtaining the Company's consent, so long as such affiliate is a registered broker dealer.

15. Adjustments for Stock Splits. The parties acknowledge and agree that all share-related numbers contained in this Agreement shall be adjusted to take into account any stock split, stock dividend or similar event effected with respect to the Placement Shares.

16. Entire Agreement; Amendment; Severability. This Agreement (including all schedules and exhibits attached hereto and Placement Notices issued pursuant hereto) constitutes the entire agreement and supersedes all other prior and contemporaneous agreements and undertakings, both written and oral, among the parties hereto with regard to the subject matter hereof. Neither this Agreement nor any term hereof may be amended except pursuant to a written instrument executed by the Company and the Agent. In the event that any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable as written by a court of competent jurisdiction, then such provision shall be given full force and effect to the fullest possible extent that it is valid, legal and enforceable, and the remainder of the terms and provisions herein shall be construed as if such invalid, illegal or unenforceable term or provision was not contained herein, but only to the extent that giving effect to such provision and the remainder of the terms and provisions hereof shall be in accordance with the intent of the parties as reflected in this Agreement.



**17. GOVERNING LAW AND TIME; WAIVER OF JURY TRIAL.** THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAWS. SPECIFIED TIMES OF DAY REFER TO NEW YORK CITY TIME. EACH PARTY HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL RIGHT TO TRIAL BY JURY IN ANY LEGAL PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY.

**18. CONSENT TO JURISDICTION.** EACH PARTY HEREBY IRREVOCABLY SUBMITS TO THE NON-EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION WITH ANY TRANSACTION CONTEMPLATED HEREBY, AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT, THAT SUCH SUIT, ACTION OR PROCEEDING IS BROUGHT IN AN INCONVENIENT FORUM OR THAT THE VENUE OF SUCH SUIT, ACTION OR PROCEEDING IS IMPROPER. EACH PARTY HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF (CERTIFIED OR REGISTERED MAIL, RETURN RECEIPT REQUESTED) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THIS AGREEMENT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW.

**19. Use of Information.** The Agent may not use any information gained in connection with this Agreement and the transactions contemplated by this Agreement, including due diligence, to advise any party with respect to transactions not expressly approved by the Company.

**20. Counterparts.** This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery of an executed Agreement by one party to the other may be made by facsimile or other electronic transmission.

**21. Effect of Headings.** The section and Exhibit headings herein are for convenience only and shall not affect the construction hereof.

## 22. Permitted Free Writing Prospectuses.

The Company represents, warrants and agrees that, unless it obtains the prior consent of the Agent (which consent shall not be unreasonably withheld or delayed), and the Agent represents, warrants and agrees that, unless it obtains the prior consent of the Company, it has not made and will not make any offer relating to the Placement Shares that would constitute an Issuer Free Writing Prospectus, or that would otherwise constitute a “free writing prospectus,” as defined in Rule 405, required to be filed with the Commission. Any such free writing prospectus that is consented to by the Agent or by the Company, as the case may be is hereinafter referred to as a “Permitted Free Writing Prospectus”. The Company represents and warrants that it has treated and agrees that it will treat each Permitted Free Writing Prospectus as an “issuer free writing prospectus,” as defined in Rule 433, and has complied and will comply with the requirements of Rule 433 applicable to any Permitted Free Writing Prospectus, including timely filing with the Commission where required, legending and record keeping.

## 23. Absence of Fiduciary Relationship.

The Company acknowledges and agrees that:

(a) The Agent is acting solely as agent in connection with the public offering of the Placement Shares and in connection with each transaction contemplated by this Agreement and the process leading to such transactions, and no fiduciary or advisory relationship between the Company or any of its respective affiliates, stockholders (or other equity holders), creditors or employees or any other party, on the one hand, and the Agent, on the other hand, has been or will be created in respect of any of the transactions contemplated by this Agreement, irrespective of whether or not the Agent has advised or is advising the Company on other matters, and the Agent has no obligation to the Company with respect to the transactions contemplated by this Agreement except the obligations expressly set forth in this Agreement;

(b) it is capable of evaluating and understanding, and understands and accepts, the terms, risks and conditions of the transactions contemplated by this Agreement;

(c) the Agent has not provided any legal, accounting, regulatory or tax advice with respect to the transactions contemplated by this Agreement and it has consulted its own legal, accounting, regulatory and tax advisors to the extent it has deemed appropriate;

(d) it is aware that the Agent and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and the Agent has no obligation to disclose such interests and transactions to the Company by virtue of any fiduciary, advisory or agency relationship or otherwise; and

(e) it waives, to the fullest extent permitted by law, any claims it may have against the Agent for breach of fiduciary duty or alleged breach of fiduciary duty in connection with the sale of Placement Shares under this Agreement and agrees that the Agent shall not have any liability (whether direct or indirect, in contract, tort or otherwise) to it in respect of such a fiduciary duty claim or to any person asserting a fiduciary duty claim on its behalf or in right of it or the Company, employees or creditors of Company, other than in respect of the Agent’s obligations under this Agreement and to keep information provided by the Company to the Agent and the Agent’s counsel confidential to the extent not otherwise publicly-available.

## 24. Definitions.

As used in this Agreement, the following terms have the respective meanings set forth below:

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 405 under the Securities Act.

“Applicable Time” means (i) each Representation Date, (ii) the time of each sale of any Placement Shares pursuant to this Agreement, and (iii) each Settlement Date.

“Business Day” shall mean any day on which the Exchange and commercial banks in the City of New York are open for business.

“Issuer Free Writing Prospectus” means any “issuer free writing prospectus,” as defined in Rule 433, relating to the Placement Shares that (1) is required to be filed with the Commission by the Company, (2) is a “road show” that is a “written communication” within the meaning of Rule 433(d)(8) (i) whether or not required to be filed with the Commission, or (3) is exempt from filing pursuant to Rule 433(d)(5)(i) because it contains a description of the Placement Shares or of the offering that does not reflect the final terms, in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company’s records pursuant to Rule 433(g) under the Securities Act.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Rule 172,” “Rule 405,” “Rule 415,” “Rule 424,” “Rule 424(b),” “Rule 430B,” and “Rule 433” refer to such rules under the Securities Act.

“Subsidiary” means any subsidiary of the Company that may be identified on Exhibit 21.1 to the Company’s Annual Report on Form 10-K for the most recently ended fiscal year, and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means any day on which shares of Common Stock are purchased and sold on the Exchange.

All references in this Agreement to financial statements and schedules and other information that is “contained,” “included” or “stated” in the Registration Statement or the Prospectus (and all other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information that is incorporated by reference in the Registration Statement or the Prospectus, as the case may be.

All references in this Agreement to the Registration Statement, the Prospectus or any amendment or supplement to any of the foregoing shall be deemed to include the copy filed with the Commission pursuant to EDGAR; all references in this Agreement to any Issuer Free Writing Prospectus (other than any Issuer Free Writing Prospectuses that, pursuant to Rule 433, are not required to be filed with the Commission) shall be deemed to include the copy thereof filed with the Commission pursuant to EDGAR; and all references in this Agreement to “supplements” to the Prospectus shall include, without limitation, any supplements, “wrappers” or similar materials prepared in connection with any offering, sale or private placement of any Placement Shares by the Agent outside of the United States.

If the foregoing correctly sets forth the understanding between the Company and the Agent, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement between the Company and the Agent.

Very truly yours,

**HCW BIOLOGICS INC.**

By: /s/ Hing C. Wong, Ph.D.

Name: Hing C. Wong, Ph.D.

Title: Chief Executive Officer and Director

ACCEPTED as of the date first-above written:

**JONESTRADING INSTITUTIONAL SERVICES LLC**

By: /s/ Burke Cook

Name: Burke Cook

Title: General Counsel

---

FORM OF PLACEMENT NOTICE

---

From: HCW BIOLOGICS INC.

To: JONESTRADING INSTITUTIONAL SERVICES LLC

Attention: \_\_\_\_\_

Subject: Placement Notice

Date: \_\_\_\_\_

Ladies and Gentlemen:

Pursuant to the terms and subject to the conditions contained in the Capital on Demand™ Sales Agreement between HCW Biologics Inc. (the “Company”) and JONESTRADING INSTITUTIONAL SERVICES LLC (“Agent”), dated August 19, 2022, the Company hereby requests that the Agent sell up to \_\_\_\_\_ of the Company’s Common Stock, \$0.0001 par value per share, at a minimum market price of \$\_\_\_\_\_ per share, during the time period beginning [month, day, time] and ending [month, day, time].

---

**Compensation**

---

The Company shall pay to the Agent in cash, upon each sale of Placement Shares pursuant to this Agreement, an amount equal to 3.0% of the gross proceeds from each sale of Placement Shares.

**SCHEDULE 3**

---

**Notice Parties**

---

The Company

Hing C. Wong	HingWong@hcwbiologics.com
Rebecca Byam	RebeccaByam@hcwbiologics.com
Nicole Valdivieso	NicoleValdivieso@hcwbiologics.com

The Agent

Moe Cohen	moec@jonestrading.com
Bryan Turley	bturley@jonestrading.com
John D'Agostini	johnd@jonestrading.com
Ryan Gerety	ryang@jonestrading.com
Burke Cook	burke@jonestrading.com

with a copy to JTCM@jonestrading.com



**EXHIBIT 7(I)**

**Form of Representation Date Certificate**

\_\_\_\_\_, 20\_\_

This Representation Date Certificate (this "Certificate") is executed and delivered in connection with Section 7(l) of the Capital on Demand™ Sales Agreement (the "Agreement"), dated August 19, 2022, and entered into between HCW Biologics Inc. (the "Company") and JonesTrading Institutional Services LLC. All capitalized terms used but not defined herein shall have the meanings given to such terms in the Agreement

The undersigned, a duly appointed and authorized officer of the Company, having made all necessary inquiries to establish the accuracy of the statements below and having been authorized by the Company to execute this certificate, hereby certifies as follows:

1. As of the date of this Certificate, (i) the Registration Statement does not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein not misleading and (ii) neither the Registration Statement nor the Prospectus contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading and (iii) no event has occurred as a result of which it is necessary to amend or supplement the Prospectus in order to make the statements therein not untrue or misleading.

2. Each of the representations and warranties of the Company contained in the Agreement (A) to the extent such representations and warranties are subject to qualifications and exceptions contained therein relating to materiality or Material Adverse Effect, are true and correct on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof, except for those representations and warranties that speak solely as of a specific date and which were true and correct as of such date, and (B) to the extent such representations and warranties are not subject to any qualifications or exceptions, are true and correct in all material respects as of the date hereof as if made on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof except for those representations and warranties that speak solely as of a specific date and which were so true and correct as of such date; and.

3. Each of the covenants required to be performed by the Company in the Agreement on or prior to the date of the Agreement, this Representation Date, and each such other date as set forth in the Agreement, has been duly, timely and fully performed in all material respects and each condition required to be complied with by the Company on or prior to the date of the Agreement, this Representation Date, and each such other date as set forth in the Agreement has been duly, timely and fully complied with in all material respects.

4. Subsequent to the date of the most recent financial statements in the Prospectus, there has been no Material Adverse Effect.

5. No stop order suspending the effectiveness of the Registration Statement or of any part thereof has been issued, and no proceedings for that purpose have been instituted or are pending or threatened by any securities or other governmental authority (including, without limitation, the Commission).

6. No order suspending the effectiveness of the Registration Statement or the qualification or registration of the Placement Shares under the applicable securities or blue sky laws of any applicable jurisdiction are in effect and no proceeding for such purpose is pending before, or threatened, to the Company's knowledge or in writing by, any applicable securities or other governmental authority (including, without limitation, the Commission).

The undersigned has executed this Representation Date Certificate as of the date first written above.

HCW BIOLOGICS INC.

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**HCW BIOLOGICS INC.**

**AND**

\_\_\_\_\_,  
**as Trustee**

**INDENTURE**

**Dated as of \_\_\_\_\_**

**Debt Securities**

Reconciliation and tie between  
Trust Indenture Act of 1939, as amended,  
and the Indenture

<u>Trust Indenture Act Section</u>	<u>Indenture Section</u>
§310(a)(1)	6.8
(a)(2)	6.8
(b)	6.9
§312(a)	7.1
(b)	7.2
(c)	7.2
§313(a)	7.3
(b)(2)	7.3
(c)	7.3
(d)	7.3
§314(a)	7.4
(c)(1)	1.2
(c)(2)	1.2
(e)	1.2
§316(a) (last sentence)	1.1
(a)(1)(A)	5.2, 5.12
(a)(1)(B)	5.13
(b)	5.8
§317(a)(1)	5.3
(a)(2)	5.4
(b)	10.3
§318(a)	1.8

Note: This reconciliation and tie shall not, for any purpose, be deemed to be part of the Indenture.

## TABLE OF CONTENTS

	Page
ARTICLE 1 DEFINITIONS AND OTHER PROVISIONS OF GENERAL APPLICATION	1
Section 1.1 Definitions; Rules of Construction	1
Section 1.2 Compliance Certificates and Opinions	11
Section 1.3 Form of Documents Delivered to Trustee	11
Section 1.4 Acts of Holders	12
Section 1.5 Notices, etc., to Trustee and Company	13
Section 1.6 Notice to Holders of Securities; Waiver	14
Section 1.7 Language of Notices	14
Section 1.8 Incorporation by Reference of Trust Indenture Act; Trust Indenture Act Controls	14
Section 1.9 Effect of Headings and Table of Contents	15
Section 1.10 Successors and Assigns	15
Section 1.11 Separability Clause	15
Section 1.12 Benefits of Indenture	15
Section 1.13 Governing Law; Waiver of Trial by Jury	15
Section 1.14 Legal Holidays	16
Section 1.15 Counterparts	16
Section 1.16 Judgment Currency	16
Section 1.17 Limitation on Individual Liability	17
ARTICLE 2 SECURITIES FORMS	17
Section 2.1 Forms Generally	17
Section 2.2 Form of Trustee's Certificate of Authentication	18
Section 2.3 Securities in Global Form	18
ARTICLE 3 THE SECURITIES	19
Section 3.1 Amount Unlimited; Issuable in Series	19
Section 3.2 Currency; Denominations	22
Section 3.3 Execution, Authentication, Delivery and Dating	23
Section 3.4 Temporary Securities	24
Section 3.5 Registration, Transfer and Exchange	24
Section 3.6 Mutilated, Destroyed, Lost and Stolen Securities	28

**TABLE OF CONTENTS**

(continued)

	<b>Page</b>
Section 3.7 Payment of Interest and Certain Additional Amounts; Rights to Interest and Certain Additional Amounts Preserved	29
Section 3.8 Persons Deemed Owners	31
Section 3.9 Cancellation	31
Section 3.10 Computation of Interest	31
Section 3.11 CUSIP and ISIN Numbers	31
<b>ARTICLE 4 SATISFACTION AND DISCHARGE OF INDENTURE</b>	<b>32</b>
Section 4.1 Satisfaction and Discharge	32
Section 4.2 Defeasance and Covenant Defeasance	33
Section 4.3 Application of Trust Money	37
Section 4.4 Qualifying Trustee	37
<b>ARTICLE 5 REMEDIES</b>	<b>37</b>
Section 5.1 Events of Default	37
Section 5.2 Acceleration of Maturity; Rescission and Annulment	38
Section 5.3 Collection of Indebtedness and Suits for Enforcement by Trustee	39
Section 5.4 Trustee May File Proofs of Claim	40
Section 5.5 Trustee May Enforce Claims without Possession of Securities	41
Section 5.6 Application of Money Collected	41
Section 5.7 Limitations on Suits	42
Section 5.8 Unconditional Right of Holders to Receive Principal and Any Premium, Interest and Additional Amounts	42
Section 5.9 Restoration of Rights and Remedies	43
Section 5.10 Rights and Remedies Cumulative	43
Section 5.11 Delay or Omission Not Waiver	43
Section 5.12 Control by Holders of Securities	43
Section 5.13 Waiver of Past or Existing Defaults	44
Section 5.14 Waiver of Stay or Extension Laws	44
Section 5.15 Undertaking for Costs	44
<b>ARTICLE 6 THE TRUSTEE</b>	<b>45</b>
Section 6.1 Certain Duties and Responsibilities	45

**TABLE OF CONTENTS**  
(continued)

	<b>Page</b>
Section 6.2 Certain Rights of Trustee	45
Section 6.3 Notice of Defaults	48
Section 6.4 Not Responsible for Recitals or Issuance of Securities	48
Section 6.5 May Hold Securities	48
Section 6.6 Money Held in Trust	48
Section 6.7 Compensation and Reimbursement	49
Section 6.8 Corporate Trustee Required; Eligibility; Conflicting Interests	50
Section 6.9 Resignation and Removal; Appointment of Successor	50
Section 6.10 Acceptance of Appointment by Successor	52
Section 6.11 Merger, Conversion, Consolidation or Succession to Business	53
Section 6.12 Appointment of Authenticating Agent	53
<b>ARTICLE 7 HOLDERS LISTS AND REPORTS BY TRUSTEE AND COMPANY</b>	<b>55</b>
Section 7.1 Company to Furnish Trustee Names and Addresses of Holders	55
Section 7.2 Preservation of Information; Communications to Holders	56
Section 7.3 Reports by Trustee	56
Section 7.4 Reports by Company	56
<b>ARTICLE 8 CONSOLIDATION, MERGER AND SALES</b>	<b>57</b>
Section 8.1 Company May Consolidate, etc., Only on Certain Terms	57
Section 8.2 Successor Person Substituted for Company	58
<b>ARTICLE 9 SUPPLEMENTAL INDENTURES</b>	<b>58</b>
Section 9.1 Supplemental Indentures without Consent of Holders	58
Section 9.2 Supplemental Indentures with Consent of Holders	60
Section 9.3 Execution of Supplemental Indentures	62
Section 9.4 Revocation of Consents	62
Section 9.5 Effect of Supplemental Indentures	62
Section 9.6 Reference in Securities to Supplemental Indentures	62
Section 9.7 Conformity with Trust Indenture Act	63
Section 9.8 Notice of Supplemental Indenture	63

**TABLE OF CONTENTS**  
(continued)

	<b>Page</b>
<b>ARTICLE 10 COVENANTS</b>	<b>63</b>
Section 10.1 Payment of Principal, Any Premium, Interest and Additional Amounts	63
Section 10.2 Maintenance of Office or Agency	63
Section 10.3 Money for Securities Payments to Be Held in Trust	64
Section 10.4 Additional Amounts	65
Section 10.5 Waiver of Certain Covenants	66
<b>ARTICLE 11 REDEMPTION OF SECURITIES</b>	<b>66</b>
Section 11.1 Applicability of Article	66
Section 11.2 Election to Redeem; Notice to Trustee	66
Section 11.3 Selection by Trustee of Securities to Be Redeemed	67
Section 11.4 Notice of Redemption	67
Section 11.5 Deposit of Redemption Price	68
Section 11.6 Securities Payable on Redemption Date	69
Section 11.7 Securities Redeemed in Part	69
Section 11.8 Repurchases on the Open Market	69
<b>ARTICLE 12 SINKING FUNDS</b>	<b>70</b>
Section 12.1 Applicability of Article	70
Section 12.2 Satisfaction of Sinking Fund Payments with Securities	70
Section 12.3 Redemption of Securities for Sinking Fund	71
<b>ARTICLE 13 REPAYMENT AT THE OPTION OF HOLDERS</b>	<b>71</b>
Section 13.1 Applicability of Article	71
<b>ARTICLE 14 SECURITIES IN FOREIGN CURRENCIES</b>	<b>72</b>
Section 14.1 Applicability of Article	72
<b>ARTICLE 15 MEETINGS OF HOLDERS OF SECURITIES</b>	<b>72</b>
Section 15.1 Purposes for Which Meetings May Be Called	72
Section 15.2 Call, Notice and Place of Meetings	72
Section 15.3 Persons Entitled to Vote at Meetings	72
Section 15.4 Quorum; Action	73
Section 15.5 Determination of Voting Rights; Conduct and Adjournment of Meetings	74
Section 15.6 Counting Votes and Recording Action of Meetings	74



INDENTURE (the "Indenture"), dated as of \_\_\_\_\_, between HCW Biologics Inc., a corporation existing under the laws of the State of Delaware (the "Company"), and \_\_\_\_\_, as trustee (the "Trustee").

## RECITALS

The Company has duly authorized the execution and delivery of this Indenture to provide for the issuance from time to time of its debentures, notes or other evidences of indebtedness (hereinafter called the "Securities"), unlimited as to principal amount, to bear such rates of interest, to mature at such time or times, to be issued in one or more series and to have such other provisions as shall be fixed as hereinafter provided.

All things necessary to make this Indenture a valid and legally binding agreement of the Company, in accordance with its terms, have been done.

NOW, THEREFORE, THIS INDENTURE WITNESSETH:

For and in consideration of the premises and the purchase of the Securities by the Holders (as herein defined) thereof, it is mutually covenanted and agreed, for the equal and proportionate benefit of all Holders of the Securities or of any series thereof as follows:

## ARTICLE 1

### DEFINITIONS AND OTHER PROVISIONS OF GENERAL APPLICATION

#### Section 1.1 Definitions; Rules of Construction

Except as otherwise expressly provided in or pursuant to this Indenture or unless the context otherwise requires, for all purposes of this Indenture:

- (1) the terms defined in this Article 1 have the meanings assigned to them in this Article 1, and include the plural as well as the singular;
- (2) all other terms used herein that are defined in the Trust Indenture Act, either directly or by reference therein, have the meanings assigned to them therein;
- (3) all accounting terms not otherwise defined herein have the meanings assigned to them in accordance with generally accepted accounting principles and, except as otherwise herein expressly provided, the terms "generally accepted accounting principles" or "GAAP" with respect to any computation required or permitted hereunder shall mean such accounting principles as are generally accepted as of the date hereof;
- (4) the words "herein," "hereof," "hereto" and "hereunder" and other words of similar import refer to this Indenture as a whole and not to any particular Article, Section or other subdivision;
- (5) the word "or" is always used inclusively (for example, the phrase "A or B" means "A or B or both," not "either A or B but not both");

- (6) provisions apply to successive events and transactions;
- (7) any reference to gender includes the masculine, feminine and the neuter, as the case may be;
- (8) references to agreements and other instruments include subsequent amendments thereto and restatements thereof;
- (9) “including” means “including without limitation”;
- (10) all exhibits are incorporated by reference herein and expressly made a part of this Indenture;
- (11) all references to articles, sections and exhibits (and subparts thereof) are to this Indenture; and
- (12) any transaction or event shall be considered “permitted by” or made “in accordance with” or “in compliance with” this Indenture or any particular provision thereof if such transaction or event is not expressly prohibited by this Indenture or such provision, as the case may be.

Certain terms used principally in certain Articles hereof are defined in those Articles.

“Act,” when used with respect to any Holders, has the meaning specified in Section 1.4.

“Additional Amounts” means any additional amounts which are required by this Indenture or by any Security, under circumstances specified herein or therein, to be paid by the Company in respect of certain taxes, assessments or other governmental charges imposed on Holders specified therein and which are owing to such Holders.

“Affiliate” of any specified Person means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person. For the purposes of this definition, “control,” when used with respect to any specified Person, means the power to direct the management and policies of such Person, directly or indirectly, whether through the ownership of voting securities, by contract or otherwise; and the terms “controlling” and “controlled” have the meanings correlative to the foregoing.

“Applicable Procedures” means, with respect to any transfer or exchange of or for beneficial interests in any Global Security, the rules and procedures of the Depository that apply to such transfer or exchange at the relevant time.

“Authenticating Agent” means any Person authorized by the Trustee pursuant to Section 6.12 to act on behalf of the Trustee to authenticate Securities of one or more series.

“Authorized Newspaper” means a newspaper, in an official language of the place of publication or in the English language, customarily published on each day that is a Business Day in the place of publication, whether or not published on days that are Legal Holidays in the place of publication, and of general circulation in each place in connection with which the term is used

or in the financial community of each such place. Where successive publications are required to be made in Authorized Newspapers, the successive publications may be made in the same or in different newspapers in the same city meeting the foregoing requirements and in each case on any day that is a Business Day in the place of publication. If it shall be impractical in the opinion of the Trustee to make any publication of any notice required hereby in an Authorized Newspaper, any publication or other notice in lieu thereof which is made or given with the approval of the Trustee shall constitute a sufficient publication of such notice.

“Board of Directors” means:

- (1) with respect to the Company, the board of directors of the Company or any committee of the board of directors of the Company duly authorized to act generally or in any particular respect for the Company under this Indenture;
- (2) with respect to any other corporation, the board of directors of the corporation or any authorized committee thereof;
- (3) with respect to a limited liability company, the managing member or managing members of such limited liability company or any authorized committee thereof;
- (4) with respect to a partnership, the board of directors of the general partner of the partnership or any authorized committee thereof; and
- (5) with respect to any other Person, the board or committee of such Person serving a similar function.

“Board Resolution” means a copy of one or more resolutions (which may be standing resolutions), certified by the Secretary or an Assistant Secretary of the Company to have been duly adopted by the Board of Directors of the Company and to be in full force and effect on the date of such certification, and delivered to the Trustee.

“Business Day” means, unless otherwise specified with respect to any Securities pursuant to Section 3.1, each day that is not a Saturday, Sunday or other day on which banking institutions in New York, New York or another Place of Payment are authorized or required by law, regulation or executive order to close.

“Capital Stock” means:

- (1) in the case of a corporation, corporate stock;
- (2) in the case of an association or business entity, any and all shares, interests, participations, rights or other equivalents (however designated) of corporate stock;
- (3) in the case of a partnership or limited liability company, partnership or membership interests (whether general or limited); and
- (4) any other interest or participation that confers on a Person the right to receive a share of the profits and losses of, or distributions of assets of, the issuing Person.

“Commission” means the Securities and Exchange Commission, as from time to time constituted, created under the Exchange Act or any successor agency.

“Common Stock” includes any Capital Stock of any class of the Company which has no preference in respect of dividends or of amounts payable in the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company.

“Company” means the Person named as the “Company” in the first paragraph of this Indenture until a successor Person shall have become such pursuant to the applicable provisions of this Indenture, and thereafter “Company” shall mean such successor Person.

“Company Request” and “Company Order” mean, respectively, a written request or order, as the case may be, signed in the name of the Company by the Chairman of the Board of Directors of the Company, a Vice Chairman, the President, a Vice President, the Treasurer, the Assistant Treasurer, the Secretary or the Assistant Secretary or other person authorized by resolution of the Board of Directors of the Company, and delivered to the Trustee.

“Corporate Trust Office” means the designated office of the Trustee at which the corporate trust business of the Trustee shall at any particular time be administered, which office at the date of original execution of this Indenture is located at \_\_\_\_\_.

“Corporation” includes corporations and limited liability companies and, except for purposes of Article 8, associations, companies (other than limited liability companies) and business trusts.

“Currency” means, with respect to any payment, deposit or other transfer in respect of the principal of or any premium or interest on or any Additional Amounts with respect to any Security, Dollars or Foreign Currency, as the case may be, in which such payment, deposit or other transfer is required to be made by or pursuant to the terms hereof or such Security and, with respect to any other payment, deposit or transfer pursuant to or contemplated by the terms hereof or such Security, means Dollars.

“CUSIP number” means the alphanumeric designation assigned to a Security by Standard & Poor’s Corporation, CUSIP Service Bureau.

“Defaulted Interest” has the meaning specified in Section 3.7.

“Definitive Security” means a certificated Security registered in the name of the Holder thereof (other than a Depositary or its nominee) issued under this Indenture pursuant to Section 3.1 and Section 3.5.

“Dollars” or “\$” means a dollar or other equivalent unit of legal tender for payment of public or private debts in the United States of America.

“Event of Default” has the meaning specified in Section 5.1.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, or any successor thereto, in each case as amended from time to time.

“Foreign Currency” means any currency, currency unit or composite currency, including, without limitation, the euro, issued by the government of one or more countries other than the United States of America or by any recognized confederation or association of such governments.

“GAAP” means generally accepted accounting principles in the United States, which are in effect from time to time.

“Global Security” means a Security issued under this Indenture in global form pursuant to Section 3.1, bearing the legend set forth in Section 2.3 and deposited with, or on behalf of, and registered in the name of, the Depository or its nominee.

“Government Obligations” means securities which are (i) direct obligations of the United States of America or the other government or governments in the confederation which issued the Foreign Currency in which the principal of or any premium or interest on any Security or any Additional Amounts in respect thereof shall be payable, in each case where the payment or payments thereunder are supported by the full faith and credit of the United States or such government or governments or (ii) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America or such other government or governments, in each case where the timely payment or payments thereunder are unconditionally guaranteed as a full faith and credit obligation by the United States of America or such other government or governments, and which, in the case of (i) or (ii), are not callable or redeemable at the option of the issuer or issuers thereof, and shall also include a Depository receipt issued by a bank or trust company as custodian with respect to any such Government Obligation or a specific payment of interest on or principal of or other amount with respect to any such Government Obligation held by such custodian for the account of the holder of a Depository receipt, provided that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such Depository receipt from any amount received by the custodian in respect of the Government Obligation or the specific payment of interest on or principal of or other amount with respect to the Government Obligation evidenced by such Depository receipt.

“Holder” means, in the case of any Registered Security, the Person in whose name such Security is registered in the Security Register.

“Indenture” means this instrument as it may from time to time be supplemented or amended by one or more indentures supplemental hereto entered into pursuant to the applicable provisions hereof and, with respect to any Security of any series, by the terms and provisions of such Security established pursuant to Section 3.1 (as such terms and provisions may be amended pursuant to the applicable provisions hereof); provided, however, that, if at any time more than one Person is acting as Trustee under this instrument, “Indenture” shall mean, with respect to any one or more series of Securities for which such Person is Trustee, this instrument as originally executed or as it may from time to time be supplemented or amended by one or more indentures supplemental hereto entered into pursuant to the applicable provisions hereof and shall include the terms of those particular series of Securities for which such Person is Trustee established pursuant to Section 3.1, exclusive, however, of any provisions or terms which relate solely to other series of Securities for which such Person is not Trustee, regardless of when such terms or provisions were adopted.

“Independent Registered Public Accounting Firm” means a firm of accountants that, with respect to the Company and any other obligor under the Securities, is an independent registered public accounting firm within the meaning of the Securities Act of 1933, as amended, and the rules and regulations promulgated by the Commission thereunder, who may be the independent registered public accounting firm regularly retained by the Company or who may be another independent registered public accounting firm. Such firm shall be entitled to rely upon any Opinion of Counsel as to the interpretation of any legal matters relating to this Indenture or certificates required to be provided hereunder.

“Indexed Security” means a Security the terms of which provide that the principal amount thereof payable at Stated Maturity may be more or less than the principal face amount thereof at original issuance.

“Indirect Participant” means an entity that, with respect to any Depositary, clears through or maintains a direct or indirect, custodial relationship with a Participant.

“interest” means any interest specified in any Security as being payable with respect to that Security, and, with respect to any Original Issue Discount Security which by its terms bears interest only after Maturity, means interest payable after Maturity and, when used with respect to a Security which provides for the payment of Additional Amounts pursuant to Section 10.4, includes such Additional Amounts.

“Interest Payment Date” means, with respect to any Security, the Stated Maturity of an installment of interest on such Security.

“Judgment Currency” has the meaning specified in Section 1.16.

“Legal Holiday” has the meaning specified in Section 1.14.

“Maturity” means, with respect to any Security, the date on which the principal of such Security or an installment of principal becomes due and payable as provided in or pursuant to this Indenture, whether at the Stated Maturity or by declaration of acceleration, notice of redemption or repurchase, notice of option to elect repayment or otherwise, and includes the Redemption Date.

“New York Banking Day” has the meaning specified in Section 1.16.

“Office” or “Agency” means, with respect to any Securities, an office or agency of the Company maintained or designated as a Place of Payment for such Securities pursuant to Section 10.2 or any other office or agency of the Company maintained or designated for such Securities pursuant to Section 10.2 or, to the extent designated or required by Section 10.2 in lieu of such office or agency, the Corporate Trust Office of the Trustee.

“**Officer**” means, with respect to any Person, the Chairman of the Board of Directors, a Vice Chairman, the Chief Executive Officer, the President, any Vice President (without regard to qualifiers such as “Executive” or “Senior”), the Chief Operating Officer, the Chief Financial Officer, the Treasurer, an Assistant Treasurer, the Controller, the Secretary or an Assistant Secretary of such Person, or other Person authorized by resolution of the Board of Directors of such Person.

“**Officer’s Certificate**” means a certificate signed by an Officer, that, if applicable, complies with the requirements of Section 314(e) of the Trust Indenture Act and is delivered to the Trustee.

“**Opinion of Counsel**” means a written opinion of counsel, who may be an employee of or counsel for the Company or other counsel that, if applicable, complies with the requirements of Section 314(e) of the Trust Indenture Act.

“**Original Issue Discount Security**” means a Security issued pursuant to this Indenture that provides, at any time prior to the final Stated Maturity of such Security, for declaration of an amount less than the principal amount thereof to be due and payable upon acceleration pursuant to Section 5.2.

“**Outstanding**” means, when used with respect to any Securities, as of the date of determination, all such Securities theretofore authenticated and delivered under this Indenture, except:

(1) any such Security theretofore cancelled by the Trustee or delivered to the Trustee for cancellation including Securities tendered and exchanged for other securities of the Company;

(2) any such Security of any series for which payment at the Maturity thereof money in the necessary amount has been theretofore deposited pursuant hereto (other than pursuant to Section 4.2) with the Trustee or any Paying Agent (other than the Company) in trust or set aside and segregated in trust by the Company (if the Company shall act as its own Paying Agent) for the Holders of such series of Securities, provided that, if such Securities are to be redeemed, notice of such redemption has been duly given pursuant to this Indenture or provision therefor satisfactory to the Trustee has been made;

(3) any such Security of any series with respect to which the Company has effected defeasance or covenant defeasance pursuant to the terms hereof, except to the extent provided in Section 4.2;

(4) any such Security which has been paid pursuant to Section 3.6 or in exchange for or in lieu of which other Securities have been authenticated and delivered pursuant to this Indenture, unless there shall have been presented to the Trustee proof satisfactory to it that such Security is held by a “protected purchaser” (as such term is defined in the New York Uniform Commercial Code) in whose hands such Security is a valid obligation of the Company; and

(5) any such Security converted or exchanged as contemplated by this Indenture into Common Stock or other securities, cash or other property, if the terms of such Security provide for such conversion or exchange pursuant to Section 3.1;

provided, however, that in determining whether the Holders of the requisite principal amount of Outstanding Securities of any series have given any request, demand, authorization, direction, notice, consent or waiver hereunder or are present at a meeting of Holders of Securities of such series for quorum purposes, (i) the principal amount of an Original Issue Discount Security that may be counted in making such determination and that shall be deemed to be Outstanding for such purposes shall be equal to the amount of the principal thereof that pursuant to the terms of such Original Issue Discount Security would be declared (or shall have been declared to be) due and payable upon a declaration of acceleration thereof pursuant to Section 5.2 at the time of such determination, and (ii) the principal amount of any Indexed Security that may be counted in making such determination and that shall be deemed Outstanding for such purpose shall be equal to the principal face amount of such Indexed Security at original issuance, unless otherwise provided in or pursuant to this Indenture, and (iii) the principal amount of a Security denominated in a Foreign Currency shall be the Dollar equivalent, determined on the date of original issuance of such Security, of the principal amount (or, in the case of an Original Issue Discount Security, the Dollar equivalent on the date of original issuance of such Security of the amount determined as provided in (i) above) of such Security, and (iv) Securities owned by the Company or any other obligor upon the Securities or any Affiliate of the Company or such other obligor, shall be disregarded and deemed not to be Outstanding, except that, in determining whether the Trustee shall be protected in making any such determination or relying upon any such request, demand, authorization, direction, notice, consent or waiver, only Securities which a Responsible Officer actually knows to be so owned shall be so disregarded. Securities so owned which shall have been pledged in good faith may be regarded as Outstanding if the pledgee establishes to the satisfaction of a Responsible Officer (A) the pledgee's right so to act with respect to such Securities and (B) that the pledgee is not the Company or any other obligor upon the Securities or an Affiliate of the Company or such other obligor.

“Participant” means, with respect to the Depositary, a Person who has an account with the Depositary.

“Paying Agent” means any Person authorized by the Company to pay the principal of, or any premium or interest on, or any Additional Amounts with respect to, any Security on behalf of the Company.

“Person” or “person” means any individual, corporation, partnership, joint venture, joint-stock company, association, trust, unincorporated organization, limited liability company or government or any agency or political subdivision thereof.

“Place of Payment” means, with respect to any Security, the place or places where the principal of, or any premium or interest on, or any Additional Amounts with respect to such Security are payable as provided in or pursuant to this Indenture or such Security.

“Predecessor Security” of any particular Security means every previous Security evidencing all or a portion of the same indebtedness as that evidenced by such particular Security; and, for the purposes of this definition, any Security authenticated and delivered under Section 3.6 in exchange for or in lieu of a lost, destroyed, mutilated or stolen Security shall be deemed to evidence the same indebtedness as the lost, destroyed, mutilated or stolen Security.



“Redemption Date” means, with respect to any Security or portion thereof to be redeemed, each date fixed for such redemption by or pursuant to this Indenture or such Security.

“Redemption Price” means, with respect to any Security or portion thereof to be redeemed, the price at which it is to be redeemed including, if applicable, accrued and unpaid interest and Additional Amounts as determined by or pursuant to this Indenture or such Security.

“Registered Security” means any Security established pursuant to Section 2.1 which is registered in the Security Register.

“Regular Record Date” for the interest payable on any Registered Security on any Interest Payment Date therefor means the date, if any, specified in or pursuant to this Indenture or such Security as the “Regular Record Date.”

“Required Currency” has the meaning specified in Section 1.16.

“Responsible Officer” means any officer of the Trustee in its Corporate Trust Office with direct responsibility for the administration of this Indenture, and also, with respect to a particular corporate trust matter, any other officer of the Trustee to whom such matter is referred because of such officer’s knowledge of and familiarity with the particular subject.

“Security” or “Securities” means any note or notes, bond or bonds, debenture or debentures, or any other evidences of indebtedness, as the case may be, authenticated and delivered under this Indenture; provided, however, that, if at any time there is more than one Person acting as Trustee under this Indenture, “Securities,” with respect to any such Person, shall mean Securities authenticated and delivered under this Indenture, exclusive, however, of Securities of any series as to which such Person is not Trustee.

“Security Register,” “Security Registrar” and “Registrar” have the respective meanings specified in Section 3.5.

“series” means a series of Securities established under this Indenture.

“Special Record Date” for the payment of any Defaulted Interest on any Registered Security means a date fixed by the Trustee pursuant to Section 3.7.

“Stated Maturity” means, with respect to any Security or any installment of principal thereof or interest thereon or any Additional Amounts with respect thereto, the date established by or pursuant to this Indenture or such Security as the fixed date on which the principal of such Security or such installment of principal or interest is, or such Additional Amounts are, due and payable.

“Subsidiary” means, with respect to any specified Person:

(1) any corporation, association or other business entity (other than a partnership or limited liability company) of which more than 50% of the total voting power of Voting Stock is at the time owned or controlled, directly or indirectly, by that Person or one or more of the other Subsidiaries of that Person (or a combination thereof); and

(2) any partnership (whether general or limited) or limited liability company (a) the sole general partner or member of which is such Person or a Subsidiary of such Person, or (b) if there is more than a single general partner or member, either (x) the only managing general partners or managing members of which are such Person or one or more Subsidiaries of such Person (or any combination thereof) or (y) such Person owns or controls, directly or indirectly, a majority of the outstanding general partner interests, member interests or other Voting Stock of such partnership or limited liability company, respectively.

“Trust Indenture Act” or “TIA” means the Trust Indenture Act of 1939, as amended, and any reference herein to the Trust Indenture Act or a particular provision thereof shall mean such Act or provision, as the case may be, as amended or replaced from time to time or as supplemented from time to time by rules or regulations adopted by the Commission under or in furtherance of the purposes of such Act or provision, as the case may be.

“Trustee” means the Person named as the “Trustee” in the first paragraph of this instrument until a successor Trustee shall have become such with respect to one or more series of Securities pursuant to the applicable provisions of this Indenture, and thereafter “Trustee” shall mean each Person who is then a Trustee hereunder; provided, however, that if at any time there is more than one such Person, “Trustee” shall mean each such Person and as used with respect to the Securities of any series shall mean only the Trustee with respect to the Securities of such series.

“United States” means, except as otherwise provided in or pursuant to this Indenture or any Security, the United States of America (including the states thereof and the District of Columbia), its territories and possessions and other areas subject to its jurisdiction.

“United States Alien” means, except as otherwise provided in or pursuant to this Indenture or any Security, any Person who, for United States federal income tax purposes, is a foreign corporation, a non-resident alien individual, a non-resident alien fiduciary of a foreign estate or trust, or a foreign partnership one or more of the members of which is, for United States federal income tax purposes, a foreign corporation, a non-resident alien individual or a non-resident alien fiduciary of a foreign estate or trust.

“U.S. Depository” or “Depository” means, with respect to any Security issuable or issued in the form of one or more Global Securities, the Person designated as U.S. Depository or Depository by the Company in or pursuant to this Indenture, which Person must be, to the extent required by applicable law or regulation, a clearing agency registered under the Exchange Act and, if so provided with respect to any Security, any successor to such Person. If at any time there is more than one such Person, “U.S. Depository” or “Depository” shall mean, with respect to any Securities, the qualifying entity which has been appointed with respect to such Securities.

“Vice President” means, when used with respect to the Company or the Trustee, any vice president, whether or not designated by a number or a word or words added before or after the title “Vice President.”

“Voting Stock” of any Person as of any date means the Capital Stock of such Person that is at the time entitled (without regard to the occurrence of any contingency) to vote in the election of the Board of Directors of such Person.

### Section 1.2 Compliance Certificates and Opinions

Except as otherwise expressly provided in or pursuant to this Indenture, upon any application or request by the Company to the Trustee to take any action under any provision of this Indenture, the Company shall furnish to the Trustee an Officer’s Certificate stating that all conditions precedent, if any, provided for in this Indenture relating to the proposed action have been complied with and an Opinion of Counsel stating that, in the opinion of such counsel, all such conditions precedent, if any, have been complied with, except that in the case of any such application or request as to which the furnishing of such documents or any of them is specifically required by any provision of this Indenture relating to such particular application or request, no additional certificate or opinion need be furnished.

Every certificate or opinion with respect to compliance with a condition or covenant or covenant provided for in this Indenture (other than a certificate delivered pursuant to Section 7.4(4)) shall include:

(1) a statement that each individual signing such certificate or opinion has read such condition or covenant and the definitions herein relating thereto;

(2) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based;

(3) a statement that, in the opinion of each such individual, he or she has made such examination or investigation as is necessary to enable him or her to express an informed opinion as to whether or not such condition or covenant has been complied with; and

(4) a statement as to whether, in the opinion of each such individual, such condition or covenant has been complied with.

### Section 1.3 Form of Documents Delivered to Trustee

In any case where several matters are required to be certified by, or covered by an opinion of, any specified Person, it is not necessary that all such matters be certified by, or covered by the opinion of, only one such Person, or that they be so certified or covered by only one document, but one such Person may certify or give an opinion with respect to some matters and one or more other such Persons as to other matters, and any such Person may certify or give an opinion as to such matters in one or several documents.

Any certificate or opinion of an Officer of the Company may be based, insofar as it relates to legal matters, upon an Opinion of Counsel, unless such Officer knows that the opinion with respect to the matters upon which his certificate or opinion is based are erroneous. Any such Opinion of Counsel may be based, insofar as it relates to factual matters, upon a certificate or opinion of, or representations by, an Officer or Officers of the Company stating that the information with respect to such factual matters is in the possession of the Company unless such

counsel knows that the certificate or opinion or representations with respect to such matters are erroneous. Any certificate, statement or opinion of an Officer of the Company or any Opinion of Counsel may be based, insofar as it relates to accounting matters, upon a certificate or opinion of or representations by an accountant or firm of accountants in the employ of the Company, unless such Officer or counsel, as the case may be, knows that the certificate or opinion or representations with respect to the accounting matters upon which his certificate, statement or opinion may be based as aforesaid are erroneous.

Where any Person is required to make, give or execute two or more applications, requests, consents, certificates, statements, opinions or other instruments under this Indenture or any Security, they may, but need not, be consolidated and form one instrument.

#### Section 1.4 Acts of Holders

(1) Any request, demand, authorization, direction, notice, consent, waiver or other action provided by or pursuant to this Indenture to be given or taken by Holders may be embodied in and evidenced by one or more instruments (including instruments in electronic, digital or other machine-readable form) of substantially similar tenor signed by such Holders (whether in person or through signatures in electronic, digital or other machine-readable form) or by an agent duly appointed in writing (including writings in electronic, digital or other machine-readable form) or may be embodied in and evidenced by the record of Holders voting in favor thereof, either in person or by proxies duly appointed in writing, at any meeting of Holders duly called and held in accordance with the provisions of Article 15, or a combination of such instruments or record. Except as herein otherwise expressly provided, such action shall become effective when such instrument or instruments or record or both are delivered to the Trustee and, where it is hereby expressly required, to the Company. Such instrument or instruments or record or both (and the action embodied therein and evidenced thereby) are herein sometimes referred to as the "Act" of the Holders signing such instrument or instruments or so voting at any such meeting. Proof of execution of any such instrument or of a writing appointing any such agent, or of the holding by any Person of a Security, shall be sufficient for any purpose of this Indenture and (subject to Section 315 of the Trust Indenture Act) conclusive in favor of the Trustee and the Company and any agent of the Trustee or the Company, if made in the manner provided in this Section 1.4. The record of any meeting of Holders of Securities shall be proved in the manner provided in Section 15.6.

Without limiting the generality of this Section 1.4, unless otherwise provided in or pursuant to this Indenture, a Holder, including a U.S. Depository that is a Holder of a Global Security, may make, give or take, by a proxy or proxies, duly appointed in writing, any request, demand, authorization, direction, notice, consent, waiver or other Act provided in or pursuant to this Indenture or the Securities to be made, given or taken by Holders, and a U.S. Depository that is a Holder of a Global Security may provide its proxy or proxies to the beneficial owners of interests in any such Global Security through such U.S. Depository's standing instructions and customary practices.

The Trustee may fix a record date for the purpose of determining the Persons who are beneficial owners of interests in any permanent Global Security held by a U.S. Depository entitled under the procedures of such U.S. Depository to make, give or take, by a proxy or proxies duly appointed in writing, any request, demand, authorization, direction, notice, consent, waiver or other Act provided in or pursuant to this Indenture to be made, given or taken by Holders.

(2) The fact and date of the execution by any Person of any such instrument or writing referred to in this Section 1.4 may be proved in any reasonable manner which the Trustee deems sufficient and in accordance with such reasonable rules as the Trustee may determine; and the Trustee may in any instance require further proof with respect to any of the matters referred to in this Section 1.4.

(3) The ownership, principal amount and serial numbers of Registered Securities held by any Person, and the date of the commencement and the date of the termination of holding the same, shall be proved by the Security Register.

(4) If the Company shall solicit from the Holders of any Registered Securities any request, demand, authorization, direction, notice, consent, waiver or other Act, the Company may, at its option (but is not obligated to), by Board Resolution, fix in advance a record date for the determination of Holders of Registered Securities entitled to give such request, demand, authorization, direction, notice, consent, waiver or other Act. If such a record date is fixed, such request, demand, authorization, direction, notice, consent, waiver or other Act may be given before or after such record date, but only the Holders of Registered Securities of record at the close of business on such record date shall be deemed to be Holders for the purpose of determining whether Holders of the requisite proportion of Outstanding Securities have authorized or agreed or consented to such request, demand, authorization, direction, notice, consent, waiver or other Act, and for that purpose the Outstanding Securities shall be computed as of such record date; provided that no such authorization, agreement or consent by the Holders of Registered Securities shall be deemed effective unless it shall become effective pursuant to the provisions of this Indenture not later than six months after the record date.

(5) Any request, demand, authorization, direction, notice, consent, waiver or other Act by the Holder of any Security shall bind every future Holder of the same Security and the Holder of every Security issued upon the registration of transfer thereof or in exchange therefor or in lieu thereof in respect of anything done or suffered to be done by the Trustee, any Security Registrar, any Paying Agent or the Company in reliance thereon, whether or not notation of such Act is made upon such Security.

#### Section 1.5 Notices, etc., to Trustee and Company

Any request, demand, authorization, direction, notice, consent, waiver or other Act of Holders or other document provided or permitted by this Indenture to be made upon, given or furnished to, or filed with:

(1) the Trustee by any Holder or the Company shall be sufficient for every purpose hereunder if made, given, furnished or filed in writing (which may be via facsimile or other electronic transmission) to or with the Trustee at its Corporate Trust Office; or

(2) the Company by the Trustee or any Holder shall be sufficient for every purpose hereunder (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid or airmail postage prepaid if sent from outside the United States, to the Company addressed to HCW Biologics Inc., 2929 N Commerce Pkwy, Miramar, FL 33025, Attention: Chief Financial Officer (with a copy to the General Counsel), or to any other address previously furnished in writing to the Trustee by the Company.

#### Section 1.6 Notice to Holders of Securities; Waiver

Except as otherwise expressly provided in or pursuant to this Indenture, where this Indenture provides for notice to Holders of Securities of all or any series of any event, such notice shall be sufficiently given to Holders of Registered Securities of such series if in writing, which may be by facsimile or other electronic transmission, or mailed, first-class postage prepaid, to each Holder of a Registered Security affected by such event, at his address as it appears in the Security Register, not later than the latest date, and not earlier than the earliest date, prescribed for the giving of such notice. In any case where notice to Holders of Registered Securities is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder of a Registered Security shall affect the sufficiency of such notice with respect to other Holders of Registered Securities given as provided herein. Any notice which is mailed in the manner herein provided shall be conclusively presumed to have been duly given or provided. In the case by reason of the suspension of regular mail service or by reason of any other cause it shall be impracticable to give such notice by mail, then such notification as shall be made with the approval of the Trustee shall constitute a sufficient notification for every purpose hereunder.

Where this Indenture provides for notice in any manner, such notice may be waived in writing by the Person entitled to receive such notice, either before or after the event, and such waiver shall be the equivalent of such notice. Waivers of notice by Holders of Securities shall be filed with the Trustee, but such filing shall not be a condition precedent to the validity of any action taken in reliance upon such waiver.

Where this Indenture provides for notice of any event to a Holder of a Global Security, such notice shall be sufficiently given if given to the Depositary for such Security (or its designee), pursuant to the Applicable Procedures of the Depositary, not later than the latest date, if any, and not earlier than the earliest date, if any, prescribed for the giving of such notice.

#### Section 1.7 Language of Notices

Any request, demand, authorization, direction, notice, consent, election or waiver required or permitted under this Indenture shall be in the English language, except that, if the Company so elects, any published notice may be in an official language of the country of publication (with a copy in English to be provided to the Trustee).

#### Section 1.8 Incorporation by Reference of Trust Indenture Act; Trust Indenture Act Controls

(a) If any provision hereof limits, qualifies or conflicts with the duties that would be imposed by any of Sections 310 to 317 of the Trust Indenture Act through operation of Section 318(c) thereof on any person, such imposed duties shall control. The following Trust Indenture Act terms have the following meanings:

“indenture securities” means the Securities;

“indenture security holder” means a Holder;

“indenture to be qualified” means this Indenture;

“indenture trustee” or “institutional trustee” means the Trustee; and

“obligor” on the indenture securities means the Company and any other obligor on the indenture securities.

All other Trust Indenture Act terms used in this Indenture that are defined by the Trust Indenture Act, defined in the Trust Indenture Act by reference to another statute or defined by SEC Rule have the meanings assigned to them by such definitions.

(b) If any provision of this Indenture limits, qualifies or conflicts with another provision which is required to be included in this Indenture by the Trust Indenture Act, the provision required by the Trust Indenture Act shall control.

Section 1.9 Effect of Headings and Table of Contents

The Article and Section headings herein and the Table of Contents are for convenience only and shall not affect the construction hereof.

Section 1.10 Successors and Assigns

All covenants and agreements in this Indenture by the Company shall bind its successors and assigns, whether so expressed or not.

Section 1.11 Separability Clause

In case any provision in this Indenture or any Security shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

Section 1.12 Benefits of Indenture

Nothing in this Indenture or any Security, express or implied, shall give to any Person, other than the parties hereto, any Security Registrar, any Paying Agent, any Authentication Agent and their successors hereunder and the Holders of Securities, any benefit or any legal or equitable right, remedy or claim under this Indenture.

Section 1.13 Governing Law; Waiver of Trial by Jury

This Indenture and the Securities shall be governed by and construed in accordance with the laws of the State of New York applicable to agreements made or instruments entered into and, in each case, performed in said state. Each of the Company and the Trustee hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Indenture, the Securities or the transactions contemplated hereby.

#### Section 1.14 Legal Holidays

Unless otherwise specified in or pursuant to this Indenture or any Securities, in any case where any Interest Payment Date, Stated Maturity or Maturity of any Security, or the last date on which a Holder has the right to convert or exchange Securities of a series that are convertible or exchangeable shall not be a Business Day (a "Legal Holiday") at any Place of Payment, then (notwithstanding any other provision of this Indenture or any Security other than a provision in any Security that specifically states that such provision shall apply in lieu hereof) payment need not be made at such Place of Payment on such date, and such Securities need not be converted or exchanged on such date but such payment may be made, and such Securities may be converted or exchanged, on the next succeeding day that is a Business Day at such Place of Payment with the same force and effect as if made on the Interest Payment Date or at the Stated Maturity or Maturity or on such last day for conversion or exchange, and no interest shall accrue on the amount payable on such date or at such time for the period from and after such Interest Payment Date, Stated Maturity, Maturity or last day for conversion or exchange, as the case may be, to the next succeeding Business Day. If this Indenture provides for a time period that ends or requires performance of any non-payment obligation by a day that is not a Business Day, then such time period shall instead be deemed to end on, and such obligation shall instead be performed by, the next succeeding Business Day.

#### Section 1.15 Counterparts

This Indenture may be executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

#### Section 1.16 Judgment Currency

The Company agrees, to the fullest extent that it may effectively do so under applicable law, that (a) if for the purpose of obtaining judgment in any court it is necessary to convert the sum due in respect of the principal of, or premium or interest, if any, or Additional Amounts on the Securities of any series (the "Required Currency") into a currency in which a judgment will be rendered (the "Judgment Currency"), the rate of exchange used shall be the rate at which in accordance with normal banking procedures the Trustee could purchase in The City of New York the requisite amount of the Required Currency with the Judgment Currency on the New York Banking Day preceding the day on which a final unappealable judgment is given and (b) its obligations under this Indenture to make payments in the Required Currency (i) shall not be discharged or satisfied by any tender, or any recovery pursuant to any judgment (whether or not entered in accordance with clause (a)), in any currency other than the Required Currency, except to the extent that such tender or recovery shall result in the actual receipt, by the payee, of the full amount of the Required Currency expressed to be payable in respect of such payments, (ii) shall be enforceable as an alternative or additional cause of action for the purpose of recovering in the Required Currency the amount, if any, by which such actual receipt shall fall short of the full amount of the Required Currency so expressed to be payable and (iii) shall not be affected by judgment being obtained for any other sum due under this Indenture. For purposes of the foregoing, "New York Banking Day" means any day except a Saturday, Sunday or a Legal Holiday in The City of New York or a day on which banking institutions in The City of New York are authorized or obligated by law, regulation or executive order to be closed.



Section 1.17 Limitation on Individual Liability

No recourse under or upon any obligation, covenant or agreement contained in this Indenture or in any Security, or for any claim based thereon or otherwise in respect thereof, shall be had against any incorporator, stockholder, officer or director, as such, past, present or future, of the Company or of any successor, either directly or through the Company or any successor, whether by virtue of any constitution, statute or rule of law, or by the enforcement of any assessment or penalty or otherwise; it being expressly understood that this Indenture and the obligations issued hereunder are solely corporate obligations, and that no such personal liability whatever shall attach to, or is or shall be incurred by, the incorporators, stockholders, officers or directors, as such, of the Company or any successor, or any of them, because of the creation of the indebtedness hereby authorized, or under or by reason of the obligations, covenants or agreements contained in this Indenture or in any Security or implied therefrom; and that any and all such personal liability of every name and nature, either at common law or in equity or by constitution or statute, of, and any and all such rights and claims against, every such incorporator, stockholder, officer or director, as such, because of the creation of the indebtedness hereby authorized, or under or by reason of the obligations, covenants or agreements contained in this Indenture or in any Security or implied therefrom, are hereby expressly waived and released as a condition of, and as a consideration for, the execution of this Indenture and the issuance of such Security.

**ARTICLE 2**

**SECURITIES FORMS**

Section 2.1 Forms Generally

Each Registered Security and temporary or permanent Global Security or Definitive Security issued pursuant to this Indenture shall be in the form established by or pursuant to a Board Resolution and set forth in an Officer's Certificate, or established in one or more indentures supplemental hereto, shall have such appropriate insertions, omissions, substitutions and other variations as are required or permitted by or pursuant to this Indenture or any indenture supplemental hereto and may have such letters, numbers or other marks of identification and such legends or endorsements placed thereon as may, consistently herewith, be determined by the Officers executing such Security as evidenced by their execution of such Security.

Unless otherwise provided in or pursuant to this Indenture or any Securities, the Securities shall be issuable in registered form without coupons and shall not be issuable upon the exercise of warrants.

Definitive Securities shall be printed, lithographed or engraved or produced by any combination of these methods on a steel engraved border or steel engraved borders or may be produced in any other manner, all as determined by the Officers of the Company executing such Securities, as evidenced by their execution of such Securities.

Section 2.2 Form of Trustee's Certificate of Authentication

Subject to Section 6.12, the Trustee's certificate of authentication shall be in substantially the following form:

This is one of the Securities of the series designated therein referred to in the within-mentioned Indenture.

\_\_\_\_\_  
, as Trustee

By: \_\_\_\_\_  
Authorized Signatory

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

Section 2.3 Securities in Global Form

Unless otherwise provided in or pursuant to this Indenture or any Securities, the Securities shall be issuable in permanent global form. If Securities of a series shall be issuable in global form, any such Security may provide that it or any number of such Securities shall represent the aggregate amount of all Outstanding Securities of such series (or such lesser amount as is permitted by the terms thereof) from time to time endorsed thereon and may also provide that the aggregate amount of Outstanding Securities represented thereby may from time to time be increased or reduced to reflect exchanges, redemptions or transfer of beneficial interests from one Global Security to another Global Security. Any endorsement of any Global Security to reflect the amount, or any increase or decrease in the amount, or changes in the rights of Holders, of Outstanding Securities represented thereby shall be made in such manner and by such Person or Persons as shall be specified therein or in the Company Order to be delivered pursuant to Section 3.3 or Section 3.4 with respect thereto. Subject to the provisions of Section 3.3 and, if applicable, Section 3.4, the Trustee shall deliver and redeliver any Security in permanent global form in the manner and upon instructions given by the Person or Persons specified therein or in the applicable Company Order. If a Company Order pursuant to Section 3.3 or Section 3.4 has been, or simultaneously is, delivered, any instructions by the Company with respect to a Global Security shall be in writing but need not be accompanied by or contained in an Officer's Certificate and need not be accompanied by an Opinion of Counsel.

Notwithstanding the provisions of Section 3.7, unless otherwise specified in or pursuant to this Indenture or any Securities, payment of principal of, any premium and interest on, and any Additional Amounts in respect of, any Security in temporary or permanent global form shall be made to the Person or Persons specified therein.

Notwithstanding the provisions of Section 3.8 and except as provided in the preceding paragraph, the Company, the Trustee and any agent of the Company or the Trustee shall treat as the Holder of such principal amount of Outstanding Securities as is represented by a Global Security in the case of a Global Security in registered form, the Holder of such Global Security in registered form.

Each Global Security shall bear a legend in substantially the following form (unless otherwise specified by the Depositary):

“THIS DEBT SECURITY IS A GLOBAL SECURITY WITHIN THE MEANING OF THE INDENTURE HEREINAFTER REFERRED TO AND IS REGISTERED IN THE NAME OF A DEPOSITARY OR A NOMINEE THEREOF. THIS DEBT SECURITY MAY NOT BE TRANSFERRED TO, OR REGISTERED OR EXCHANGED FOR SECURITIES REGISTERED IN THE NAME OF, ANY PERSON OTHER THAN THE DEPOSITARY OR A NOMINEE THEREOF AND NO SUCH TRANSFER MAY BE REGISTERED, EXCEPT IN THE LIMITED CIRCUMSTANCES DESCRIBED IN THE INDENTURE. EVERY DEBT SECURITY AUTHENTICATED AND DELIVERED UPON REGISTRATION OF TRANSFER OF, OR IN EXCHANGE FOR OR IN LIEU OF, THIS DEBT SECURITY SHALL BE A GLOBAL SECURITY SUBJECT TO THE FOREGOING, EXCEPT IN SUCH LIMITED CIRCUMSTANCES.”

### ARTICLE 3

#### THE SECURITIES

##### Section 3.1 Amount Unlimited; Issuable in Series

The aggregate principal amount of Securities that may be authenticated and delivered under this Indenture is unlimited. The Securities may be issued in one or more series. With respect to any Securities to be authenticated and delivered hereunder, there shall be established in or pursuant to a Board Resolution and set forth in an Officer’s Certificate, or established in one or more indentures supplemental hereto,

(1) the title of such Securities and the series, including CUSIP numbers in which such Securities shall be included;

(2) any limit upon the aggregate principal amount of the Securities of such series that may be authenticated and delivered under this Indenture (except for Securities authenticated and delivered upon registration of transfer of, or in exchange for, or in lieu of, other Securities of such series pursuant to Section 3.4, Section 3.5, Section 3.6, Section 9.6 or Section 11.7, upon repayment in part of any Registered Security of such series pursuant to Article 13 or upon surrender in part of any Registered Security for conversion or exchange into Common Stock or other securities, cash or other property pursuant to its terms, or pursuant to the terms of such Securities and except for any Securities, which, pursuant to Section 3.3, are deemed never to have been authenticated and delivered hereunder);

(3) if any of such Securities are to be issuable in global form, when any of such Securities are to be issuable in global form and (i) whether such Securities are to be issued in temporary or permanent global form or both, (ii) whether beneficial owners of interests in any such Global Security may exchange such interests for Securities of the same series and of like tenor and of any authorized form and denomination, and the circumstances under which any such exchanges may occur, if other than in the manner specified in Section 3.5, and (iii) the name of the Depositary or the U.S. Depositary, as the case may be, with respect to any Global Security;

- (4) the date as of which any Global Security shall be dated (if other than the date of original issuance of the first of such Securities to be issued);
- (5) the date or dates, or the method for determining such date or dates, on which the principal of such Securities will be payable;
- (6) the rate or rates at which such Securities shall bear interest, if any, or the method or methods, if any, by which such rate or rates are to be determined, the date or dates, if any, from which such interest shall accrue or the method or methods, if any, by which such date or dates are to be determined, the Interest Payment Dates, if any, on which such interest shall be payable and the Regular Record Date, if any, for the interest payable on Registered Securities on any Interest Payment Date, whether and under what circumstances Additional Amounts on such Securities or any of them shall be payable, the notice, if any, to Holders regarding the determination of interest on a floating rate Security and the manner of giving such notice, and the basis upon which interest shall be calculated if other than that of a 360-day year of twelve 30-day months;
- (7) if in addition to or other than the Borough of Manhattan, The City of New York, the place or places where the principal of, any premium and interest on or any Additional Amounts with respect to such Securities shall be payable, any of such Securities that are Registered Securities may be surrendered for registration of transfer or exchange, any of such Securities may be surrendered for conversion or exchange and notices or demands to or upon the Company in respect of such Securities and this Indenture may be served, the extent to which, or the manner in which, any interest payment or Additional Amounts on a Global Security on an Interest Payment Date, will be paid and the manner in which any principal of or premium, if any, on any Global Security will be paid;
- (8) whether any of such Securities are to be redeemable at the option of the Company and, if so, the date or dates on which, the period or periods within which, the price or prices at which and the other terms and conditions upon which such Securities may be redeemed, in whole or in part, at the option of the Company;
- (9) whether the Company is obligated to redeem or purchase any of such Securities pursuant to any sinking fund or analogous provision or at the option of any Holder thereof and, if so, the date or dates on which, the period or periods within which, the price or prices at which and the other terms and conditions upon which such Securities shall be redeemed or purchased, in whole or in part, pursuant to such obligation, and any provisions for the remarketing of such Securities so redeemed or purchased;
- (10) the denominations in which any of such Securities that are Registered Securities shall be issuable if other than denominations of \$1,000 and any multiple of \$1,000 in excess thereof;

(11) whether the Securities of the series will be convertible into shares of Common Stock and/or exchangeable for other securities, cash or other property of the Company or of any other Person, and if so, the terms and conditions upon which such Securities will be so convertible or exchangeable, and any deletions from or modifications or additions to this Indenture to permit or to facilitate the issuance of such convertible or exchangeable Securities or the administration thereof;

(12) if other than the principal amount thereof, the portion of the principal amount of any of such Securities that shall be payable upon declaration of acceleration of the Maturity thereof pursuant to Section 5.2 or the method by which such portion is to be determined;

(13) if other than Dollars, the Foreign Currency in which payment of the principal of, any premium or interest on or any Additional Amounts with respect to any of such Securities shall be payable;

(14) if the principal of, any premium or interest on or any Additional Amounts with respect to any of such Securities are to be payable, at the election of the Company or a Holder thereof or otherwise, in Currency other than that in which such Securities are stated to be payable, the date or dates on which, the period or periods within which, and the other terms and conditions upon which, such election may be made, and the time and manner of determining the exchange rate between the Currency in which such Securities are stated to be payable and the Currency in which such Securities or any of them are to be paid pursuant to such election, and any deletions from or modifications of or additions to the terms of this Indenture to provide for or to facilitate the issuance of Securities denominated or payable, at the election of the Company or a Holder thereof or otherwise, in a Foreign Currency;

(15) whether the amount of payments of principal of, any premium or interest on or any Additional Amounts with respect to such Securities may be determined with reference to an index, formula, financial or economic measure or other method or methods (which index, formula, measure or method or methods may be based, without limitation, on one or more Currencies, commodities, equity indices or other indices), and, if so, the terms and conditions upon which and the manner in which such amounts shall be determined and paid or be payable;

(16) any deletions from, modifications of or additions to the Events of Default or covenants of the Company with respect to any of such Securities, whether or not such Events of Default or covenants are consistent with the Events of Default or covenants set forth herein;

(17) whether either or both of Section 4.2(2) relating to defeasance or Section 4.2(3) relating to covenant defeasance shall not be applicable to the Securities of such series, and any covenants relating to the Securities of such series which shall be subject to covenant defeasance, and, if the Securities of such series are subject to repurchase or repayment at the option of the Holders thereof, whether the Company's obligation to repurchase or repay such Securities will be subject to defeasance or covenant defeasance, and any deletions from, or modifications or additions to, the provisions of Article 4 in respect of the Securities of such series;

(18) whether any of such Securities are to be issuable upon the exercise of warrants or units, and the time, manner and place for such Securities to be authenticated and delivered;

(19) if there is more than one Trustee or a Trustee other than \_\_\_\_\_, the identity of the Trustee and, if not the Trustee, the identity of each Security Registrar, Paying Agent or Authenticating Agent with respect to such Securities;

(20) whether the Securities are senior or subordinated debt securities, and if subordinated debt securities, the terms of such subordination;

(21) whether the Securities of the series will be guaranteed by any Persons and, if so, the identity of such Persons, the terms and conditions upon which such Securities shall be guaranteed and, if applicable, the terms and conditions upon which such guarantees may be subordinated to other indebtedness of the respective guarantors and may be released;

(22) whether the Securities of the series will be secured by any collateral and, if so, the terms and conditions upon which such Securities shall be secured and, if applicable, upon which such liens may be subordinated to other liens securing other indebtedness of the Company or any guarantor and may be released; and

(23) any other terms of such Securities and any deletions from or modifications or additions to this Indenture in respect of such Securities.

All Securities of any one series shall be substantially identical except as to denomination and except as may otherwise be provided by the Company in or pursuant to the Board Resolution and set forth in the Officer's Certificate or in any indenture or indentures supplemental hereto pertaining to such series of Securities. The terms of the Securities of any series may provide, without limitation, that the Securities of such series shall be authenticated and delivered by the Trustee on original issue from time to time in accordance with such procedures as are acceptable to the Trustee (including authentication and delivery by the Trustee on original issue from time to time upon telephonic or written order of persons designated in the Officer's Certificate or supplemental indenture (telephonic instructions to be promptly confirmed in writing by such person) and that such persons are authorized to determine, consistent with such Officer's Certificate or any applicable supplemental indenture, such terms and conditions of the Securities of such series as are specified in such Officer's Certificate or supplemental indenture). All Securities of any one series need not be issued at the same time and, unless otherwise so provided by the Company, a series may be reopened for issuances of additional Securities of such series or to establish additional terms of such series of Securities. If any of the terms of the Securities of any series shall be established by action taken by or pursuant to a Board Resolution, the Board Resolution shall be delivered to the Trustee at or prior to the delivery of the Officer's Certificate setting forth the terms of such series.

### Section 3.2 Currency; Denominations

Unless otherwise provided in or pursuant to this Indenture or any Security, the principal of, any premium and interest on and any Additional Amounts with respect to, the Securities shall be payable in Dollars. Unless otherwise provided in or pursuant to this Indenture, Registered Securities denominated in Dollars shall be issuable in registered form without coupons in denominations of \$1,000 or any integral multiple of \$1,000 in excess thereof. Securities not denominated in Dollars shall be issuable in such denominations as are established with respect to such Securities in or pursuant to this Indenture.

### Section 3.3 Execution, Authentication, Delivery and Dating

Securities shall be executed on behalf of the Company by any Officer of the Company. The signature of any such Officer on the Securities may be manual or facsimile.

Securities bearing the manual or facsimile signatures of individuals who were at any time the proper Officers of the Company shall bind the Company, notwithstanding that such individuals or any of them have ceased to hold such offices prior to the authentication and delivery of such Securities or did not hold such offices at the date of such Securities.

At any time and from time to time after the execution and delivery of this Indenture, the Company may deliver Securities, executed by the Company, to the Trustee for authentication and, provided that the Board Resolution and Officer's Certificate or supplemental indenture or indentures with respect to such Securities referred to in Section 3.1 and a Company Order for the authentication and delivery of such Securities have been delivered to the Trustee, the Trustee in accordance with the Company Order and subject to the provisions hereof and of such Securities shall authenticate and deliver such Securities. In authenticating such Securities, and accepting the additional responsibilities under this Indenture in relation to such Securities, the Trustee shall be provided with, and (subject to Sections 315(a) through 315(d) of the Trust Indenture Act) shall be fully protected in relying upon an Opinion of Counsel and an Officer's Certificate that contain the statements required by Section 1.2.

The Trustee shall not be required to authenticate such Securities if the issue of such Securities pursuant to this Indenture will affect the Trustee's own rights, duties or immunities under the Securities and this Indenture or otherwise in a manner which is not reasonably acceptable to the Trustee.

Notwithstanding the provisions of Section 3.1 and of the preceding paragraph, if all Securities of a series are not to be originally issued at one time, it shall not be necessary to deliver the Officer's Certificate or Company Order otherwise required pursuant to such preceding paragraph at or prior to the authentication of each Security of such series if such documents are delivered at or prior to the authentication upon original issuance of the first Security of such series to be issued. This paragraph shall not be applicable to Securities of a series that are issued as part of a reopening pursuant to the last paragraph of Section 3.1.

Each Registered Security shall be dated the date of its authentication.

No Security shall be entitled to any benefit under this Indenture or be valid or obligatory for any purpose, unless there appears on such Security a certificate of authentication substantially in the form provided for in Section 2.2 or Section 6.12 executed by or on behalf of the Trustee or by the Authenticating Agent by the manual signature of one of its authorized signatories. Such certificate upon any Security shall be conclusive evidence, and the only evidence, that such Security has been duly authenticated and delivered hereunder.

Notwithstanding the foregoing, if any Security shall have been authenticated and delivered hereunder but never issued and sold by the Company, and the Company shall deliver such Security to the Trustee for cancellation as provided in Section 3.9, for all purposes of this Indenture such Security shall be deemed never to have been authenticated and delivered hereunder and shall never be entitled to the benefits of this Indenture.

#### Section 3.4 Temporary Securities

Pending the preparation of Definitive Securities, the Company may execute and deliver to the Trustee and, upon Company Order, the Trustee shall authenticate and deliver, in the manner provided in Section 3.3, temporary Securities in lieu thereof which are printed, lithographed, typewritten, mimeographed or otherwise produced, in any authorized denomination, substantially of the tenor of the Definitive Securities in lieu of which they are issued, in registered form and with such appropriate insertions, omissions, substitutions and other variations as the Officers of the Company executing such Securities may determine, as conclusively evidenced by their execution of such Securities. Such temporary Securities may be in the form of Global Securities.

Except in the case of temporary Global Securities, which shall be exchanged in accordance with the provisions thereof, if temporary Securities are issued, the Company shall cause Definitive Securities to be prepared without unreasonable delay. After the preparation of Definitive Securities of the same series and containing terms and provisions that are identical to those of any temporary Securities, such temporary Securities shall be exchangeable for such Definitive Securities upon surrender of such temporary Securities at an Office or Agency for such Securities, without charge to any Holder thereof. Upon surrender for cancellation of any one or more temporary Securities, the Company shall execute and the Trustee shall authenticate and deliver in exchange therefor a like principal amount of Definitive Securities of authorized denominations of the same series and containing identical terms and provisions. Unless otherwise provided in or pursuant to this Indenture with respect to a temporary Global Security, until so exchanged the temporary Securities of any series shall in all respects be entitled to the same benefits under this Indenture as Definitive Securities of such series.

#### Section 3.5 Registration, Transfer and Exchange

With respect to the Registered Securities of each series, if any, the Company shall cause to be kept a register (each such register being herein sometimes referred to as the "Security Register") at an Office or Agency for such series in which, subject to such reasonable regulations as it may prescribe, the Company shall provide for the registration of the Registered Securities of such series and of transfers of the Registered Securities of such series.

Such Office or Agency shall be the "Security Registrar" or "Registrar" for that series of Securities. Unless otherwise specified in or pursuant to this Indenture or the Securities, the Trustee shall be the initial Security Registrar for each series of Securities. The Company shall have the right to remove and replace from time to time the Security Registrar for any series of Securities; provided that no such removal or replacement shall be effective until a successor Security Registrar with respect to such series of Securities shall have been appointed by the Company and shall have accepted such appointment by the Company. In the event that the Trustee shall not be or shall cease to be Security Registrar with respect to a series of Securities, it shall have the right to examine the Security Register for such series at all reasonable times. There shall be only one Security Register for each series of Securities.



A Global Security may not be transferred as a whole except by the Depositary to a nominee of the Depositary, by a nominee of the Depositary to the Depositary or to another nominee of the Depositary, or by the Depositary or any such nominee to a successor Depositary or a nominee of such successor Depositary. Notwithstanding the foregoing, except as may be provided pursuant to Section 3.1, any Global Security or any beneficial interest therein shall be exchangeable for Definitive Securities only if (i) the Depositary is at any time unwilling, unable or ineligible to continue as Depositary and a successor Depositary is not appointed by the Company within 90 days of the date the Company is so informed in writing, (ii) the Depositary ceases to be a clearing agency registered under the Exchange Act, (iii) the Company (subject to the Applicable Procedures) executes and delivers to the Trustee a Company Order to the effect that such Global Security shall be so exchangeable or (iv) an Event of Default has occurred and is continuing with respect to such Securities. If the holder of a Global Security or the beneficial owners of interests in a Global Security are entitled to exchange such interests for Definitive Securities as the result of an event specified in clause (i), (ii), (iii) or (iv) of the preceding sentence, the Company shall promptly make available to the Trustee Definitive Securities in such form and denominations as are required by or pursuant to this Indenture, and of the same series, containing identical terms and in aggregate principal amount equal to the principal amount of such Global Security, executed by the Company. Such Global Security shall be surrendered from time to time by the U.S. Depositary or such other Depositary as shall be specified in the Company Order with respect thereto, and in accordance with instructions given to the Trustee and the U.S. Depositary or such other Depositary, as the case may be (which instructions shall be in writing but need not be contained in or accompanied by an Officer's Certificate or be accompanied by an Opinion of Counsel), as shall be specified in the Company Order with respect thereto to the Trustee, as the Company's agent for such purpose, to be exchanged, in whole or in part, for Definitive Securities as described above without charge. The Trustee shall authenticate and make available for delivery, in exchange for each portion of such surrendered Global Security, a like aggregate principal amount of Definitive Securities of the same series of authorized denominations and of like tenor as the portion of such Global Security to be exchanged; provided, however, that no such exchanges may occur during a period beginning at the opening of business 15 days before any selection of Securities of the same series to be redeemed and ending on the relevant Redemption Date. Promptly following any such exchange in part, such Global Security shall be returned by the Trustee to such Depositary or the U.S. Depositary, as the case may be, or such other Depositary or U.S. Depositary referred to above in accordance with the instructions of the Company referred to above. If a Registered portion of a Global Security is exchanged for Definitive Registered Securities after the close of business at the Office or Agency for such Security where such exchange occurs on or after (i) any Regular Record Date for such Security and before the opening of business at such Office or Agency on the next Interest Payment Date, or (ii) any Special Record Date for such Security and before the opening of business at such Office or Agency on the related proposed date for payment of interest or Defaulted Interest, as the case may be, interest shall not be payable on such Interest Payment Date or proposed date for payment, as the case may be, in respect of such Definitive Registered Security, but shall be payable on such Interest Payment Date or proposed date for payment, as the case may be, only to the Person to whom interest in respect of such portion of such Global Security shall be payable in accordance with the provisions of this Indenture.

The transfer and exchange of beneficial interests in the Global Securities shall be effected through the Depositary, in accordance with the provisions of this Indenture and the Applicable Procedures. Transfers and exchanges of beneficial interests in the Global Securities also shall require compliance with either subparagraph (1) or (2) below, as applicable, as well as one or more of the other following paragraphs, as applicable:

(1) Beneficial interests in any Global Security may be transferred to Persons who take delivery thereof in the form of a beneficial interest in the same Global Security. No written orders or instructions shall be required to be delivered to the Registrar to effect the transfers described in this subparagraph (1).

(2) In connection with the transfer or exchange of beneficial interests in any Global Security to Persons who take delivery thereof in the form of a beneficial interest in a different Global Security, the transferor of such beneficial interest must deliver to the Registrar (i) an order from a Participant or an Indirect Participant given to the Depositary in accordance with the Applicable Procedures directing the Depositary to credit or cause to be credited a beneficial interest in another Global Security in an amount equal to the beneficial interest to be transferred or exchanged and (ii) instructions given in accordance with the Applicable Procedures containing information regarding the Participant account to be credited with such increase. Upon satisfaction of all of the requirements for transfer or exchange of beneficial interests in Global Securities contained in this Indenture and such Securities or otherwise applicable under the Securities Act, the Trustee shall adjust the principal amount of the relevant Global Security(s) pursuant to this paragraph.

If any Holder of a beneficial interest in a Global Security proposes to exchange such beneficial interest for a Definitive Security or to transfer such beneficial interest to a Person who takes delivery thereof in the form of a Definitive Security in the event of the occurrence of any of the conditions set forth in the third paragraph of this Section 3.5, then, upon delivery to the Registrar of (i) an order from a Participant or an Indirect Participant given to the Depositary in accordance with the Applicable Procedures directing the Depositary to cause to be issued a Definitive Security in an amount equal to the beneficial interest to be transferred or exchanged and (ii) instructions given by the Depositary to the Registrar containing information regarding the Person in whose name such Definitive Security shall be registered to effect the transfer or exchange referred to in clause (i), the Trustee shall cause the aggregate principal amount of the applicable Global Security to be reduced accordingly as described below, and the Company shall execute and, upon receipt of a Company Order pursuant to Section 3.3, the Trustee shall authenticate and deliver to the Person designated in the instructions a Definitive Security in the appropriate principal amount. Any Definitive Security issued in exchange for a beneficial interest pursuant to this paragraph shall be registered in such name or names and in such authorized denomination or denominations as the Holder of such beneficial interest shall instruct the Registrar through instructions from the Depositary and the Participant or Indirect Participant. The Trustee shall deliver such Definitive Securities to the Persons in whose names such Securities are so registered.

A Holder of a Definitive Security may exchange such Security for a beneficial interest in a Global Security or transfer such Definitive Securities to a Person who takes delivery thereof in the form of a beneficial interest in a Global Security at any time. Upon receipt of a request for such an exchange or transfer, the Trustee shall cancel the applicable Definitive Security and increase or cause to be increased the aggregate principal amount of the applicable Global Security.

At the option of the Holder, Definitive Securities of any series may be exchanged for other Definitive Securities of the same series, of any authorized denominations and of like tenor and aggregate principal amount, upon surrender of the Definitive Securities to be exchanged at an Office or Agency. Whenever any Definitive Securities are so surrendered for exchange, the Company shall execute, and the Trustee shall authenticate and deliver, the Definitive Securities which the Holder making the exchange is entitled to receive.

Upon request by a Holder of Definitive Securities and such Holder's compliance with the provisions of this paragraph, the Registrar shall register the transfer or exchange of Definitive Securities. Prior to such registration of transfer or exchange, the requesting Holder shall present or surrender to the Registrar the Definitive Securities duly endorsed or accompanied by a written instruction of transfer in form satisfactory to the Registrar duly executed by such Holder or by its attorney, duly authorized in writing. A Holder of Definitive Securities may transfer such Securities to a Person who takes delivery thereof in the form of a Definitive Security. Upon receipt of a request to register such a transfer, the Registrar shall register the Definitive Securities pursuant to the instructions from the Holder thereof.

At such time as all beneficial interests in a particular Global Security have been exchanged for Definitive Securities or a particular Global Security has been redeemed, repurchased or cancelled in whole and not in part, each such Global Security shall be returned to or retained and cancelled by the Trustee in accordance with Section 3.9. At any time prior to such cancellation, if any beneficial interest in a Global Security is exchanged for or transferred to a Person who will take delivery thereof in the form of a beneficial interest in another Global Security or for Definitive Securities, the principal amount of Securities represented by such Global Security shall be reduced accordingly and an endorsement shall be made on such Global Security by the Trustee or by the Depositary at the direction of the Trustee to reflect such reduction; and if the beneficial interest is being exchanged for or transferred to a Person who will take delivery thereof in the form of a beneficial interest in another Global Security, the principal amount of Securities represented by such other Global Security shall be increased accordingly and an endorsement shall be made on such Global Security by the Trustee or by the Depositary at the direction of the Trustee to reflect such increase.

All Securities issued upon any registration of transfer or exchange of Securities shall be the valid and legally binding obligations of the Company evidencing the same debt and entitling the Holders thereof to the same benefits under this Indenture as the Securities surrendered upon such registration of transfer or exchange.

Every Registered Security presented or surrendered for registration of transfer or for exchange or redemption shall (if so required by the Company or the Security Registrar for such Security) be duly endorsed, signature guaranteed, or be accompanied by a written instrument of transfer in form satisfactory to the Company and the Security Registrar for such Security duly executed by the Holder thereof, signature guaranteed, or his or her attorney duly authorized in writing.

No service charge shall be made for any registration of transfer or exchange, or redemption of Securities, but the Company may require payment of a sum sufficient to cover any tax or other governmental charge and any other expenses (including fees and expenses of the Trustee) that may be imposed in connection with any registration of transfer or exchange of Securities, other than exchanges pursuant to Sections 3.4, 3.6, 9.6 and 11.7 not involving any transfer.

Except as otherwise provided in or pursuant to this Indenture, the Company shall not be required (i) to issue, register the transfer of or exchange any Securities during a period beginning at the opening of business 15 days before the day of selection of Securities of like tenor and the same series under Section 11.3 for redemption and ending at the close of business on the day of such selection, (ii) to register the transfer of or exchange any Registered Security so selected for redemption in whole or in part, except in the case of any Security to be redeemed in part, the portion thereof not to be redeemed, or (iii) to issue, register the transfer of or exchange any Security which, in accordance with its terms, has been surrendered for repayment or purchase at the option of the Holder, except the portion, if any, of such Security not to be so repaid.

The Registrar shall retain copies of all certificates, notices and other written communications received pursuant to this Section 3.5. The Company shall have the right to inspect and make copies of all such certificates, notices or other written communications at any reasonable time upon the giving of reasonable written notice to the Registrar.

All certifications and certificates required to be submitted to the Registrar pursuant to this Section 3.5 to effect a registration of transfer or exchange may be submitted by facsimile, with an original of such document to be sent promptly thereafter.

#### Section 3.6 Mutilated, Destroyed, Lost and Stolen Securities

If any mutilated Security is surrendered to the Trustee, subject to the provisions of this Section 3.6, the Company shall execute and the Trustee shall authenticate and deliver in exchange therefor a new Security of the same series containing identical terms and of like principal amount and bearing a number not contemporaneously outstanding.

If there be delivered to the Company and to the Trustee (i) evidence to their satisfaction of the destruction, loss or theft of any Security and (ii) such security or indemnity as may be required by them to save each of them and any agent of either of them harmless, then, in the absence of notice to the Company or to a Responsible Officer that such Security has been acquired by a "protected purchaser" (as such term is defined in the New York Uniform Commercial Code), the Company shall execute and, upon the Company's request the Trustee shall authenticate and deliver, in exchange for or in lieu of any such destroyed, lost or stolen Security, a new Security of the same series containing identical terms and of like principal amount and bearing a number not contemporaneously outstanding.

Notwithstanding the foregoing provisions of this Section 3.6, in case any mutilated, destroyed, lost or stolen Security has become or is about to become due and payable, the Company in its discretion may, instead of issuing a new Security, pay such Security.

Upon the issuance of any new Security under this Section 3.6, the Company may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith.

Every new Security issued pursuant to this Section 3.6 in lieu of any destroyed, lost or stolen Security shall constitute a separate obligation of the Company, whether or not the destroyed, lost or stolen Security shall be at any time enforceable by anyone, and shall be entitled to all the benefits of this Indenture equally and proportionately with any and all other Securities of such series duly issued hereunder.

The provisions of this Section 3.6, as amended or supplemented pursuant to this Indenture with respect to particular Securities or generally, shall be exclusive and shall preclude (to the extent lawful) all other rights and remedies with respect to the replacement or payment of mutilated, destroyed, lost or stolen Securities.

Section 3.7 Payment of Interest and Certain Additional Amounts; Rights to Interest and Certain Additional Amounts Preserved

Unless otherwise provided in or pursuant to this Indenture, any interest on and any Additional Amounts with respect to, any Registered Security that shall be payable, and are punctually paid or duly provided for, on any Interest Payment Date shall be paid to the Person in whose name such Security (or one or more Predecessor Securities) is registered as of the close of business on the Regular Record Date for such interest.

Unless otherwise provided in or pursuant to this Indenture, any interest on and any Additional Amounts with respect to, any Registered Security that shall be payable, but shall not be punctually paid or duly provided for, on any Interest Payment Date for such Registered Security (herein called "Defaulted Interest") shall forthwith cease to be payable to the Holder thereof on the relevant Regular Record Date by virtue of having been such Holder; and such Defaulted Interest may be paid by the Company, at its election in each case, as provided in clause (1) or (2) below:

(1) The Company may elect to make payment of any Defaulted Interest to the Person in whose name such Registered Security (or a Predecessor Security thereof) shall be registered at the close of business on a Special Record Date for the payment of such Defaulted Interest, which shall be fixed in the following manner. The Company shall notify the Trustee in writing of the amount of Defaulted Interest proposed to be paid on such Registered Security and the date of the proposed payment, and at the same time the Company shall deposit with the Trustee an amount of money equal to the aggregate amount proposed to be paid in respect of such Defaulted Interest or shall make arrangements satisfactory to the Trustee for such deposit on or prior to the date of the proposed payment, such money when so deposited to be held in trust for the benefit of the Person entitled to such Defaulted Interest as in this clause provided. Thereupon, the Trustee shall

fix a Special Record Date for the payment of such Defaulted Interest which shall be not more than 15 days and not less than 10 days prior to the date of the proposed payment and not less than 10 days after the receipt by the Trustee of the notice of the proposed payment. The Trustee shall promptly notify the Company of such Special Record Date and, in the name and at the expense of the Company, shall cause notice of the proposed payment of such Defaulted Interest and the Special Record Date therefor to be given in the manner provided in Section 1.6, not less than 10 days prior to such Special Record Date. The Trustee may, in its discretion, in the name and at the expense of the Company, cause a similar notice to be published at least once in an Authorized Newspaper of general circulation in the Borough of Manhattan, The City of New York, but such publication shall not be a condition precedent to the establishment of such Special Record Date. Notice of the proposed payment of such Defaulted Interest and the Special Record Date therefor having been so given, such Defaulted Interest shall be paid to the Person in whose name such Registered Security (or a Predecessor Security thereof) shall be registered at the close of business on such Special Record Date and shall no longer be payable pursuant to the following clause (2).

(2) The Company may make payment of any Defaulted Interest in any other lawful manner not inconsistent with the requirements of any securities exchange on which such Security may be listed, and upon such notice as may be required by such exchange, if, after notice given by the Company to the Trustee of the proposed payment pursuant to this clause, such payment shall be deemed practicable by the Trustee.

Unless otherwise provided in or pursuant to this Indenture or the Securities of any particular series pursuant to the provisions of this Indenture, at the option of the Company, interest on Registered Securities that bear interest may be paid by wire transfer in immediately available funds if the Holder of the Registered Security has provided to the Company and the Trustee wire instructions at least five Business Days prior to the applicable payment date or by check mailed to the address of that Holder as it appears on the books of the Securities Registrar if that Holder has not provided wire instructions; provided that any payment of principal (or premium, if any) in respect of any Security will be made only upon presentation and surrender of such Security at the applicable Office or Agency.

Subject to the foregoing provisions of this Section 3.7 and Section 3.5, each Security delivered under this Indenture upon registration of transfer of or in exchange for or in lieu of any other Security shall carry the rights to interest accrued and unpaid, and to accrue, which were carried by such other Security.

In the case of any Registered Security of any series that is convertible, which Registered Security is converted after any Regular Record Date and on or prior to the immediately succeeding Interest Payment Date (other than any Registered Security with respect to which the Maturity is prior to such Interest Payment Date), interest on such Interest Payment Date shall be payable on such Interest Payment Date notwithstanding such conversion, and such interest (whether or not punctually paid or duly provided for) shall be paid to the Person in whose name that Registered Security (or one or more predecessor Registered Securities) is registered at the close of business on such Regular Record Date. Except as otherwise expressly provided in the immediately preceding sentence, in the case of any Registered Security which is converted, interest with respect to which the Stated Maturity is after the date of conversion of such Registered Security shall not be payable.

### Section 3.8 Persons Deemed Owners

Prior to due presentment of a Registered Security for registration of transfer, the Company, the Trustee and any agent of the Company or the Trustee may treat the Person in whose name such Registered Security is registered in the Security Register as the owner of such Registered Security for the purpose of receiving payment of principal of, any premium and (subject to Section 3.5 and Section 3.7) interest on and any Additional Amounts with respect to, such Registered Security and for all other purposes whatsoever, whether or not any payment with respect to such Registered Security shall be overdue, and none of the Company, the Trustee or any agent of the Company or the Trustee shall be affected by notice to the contrary.

No holder of any beneficial interest in any Global Security held on its behalf by a Depository shall have any rights under this Indenture with respect to such Global Security, and such Depository may be treated by the Company, the Trustee and any agent of the Company or the Trustee as the owner of such Global Security for all purposes whatsoever. None of the Company, the Trustee, any Paying Agent or the Security Registrar will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests of a Global Security or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

### Section 3.9 Cancellation

All Securities surrendered for payment, redemption, registration of transfer, exchange or conversion or for credit against any sinking fund payment shall, if surrendered to any Person other than the Trustee, be delivered to the Trustee, and any such Securities, as well as Securities surrendered directly to the Trustee for any such purpose, shall be cancelled promptly by the Trustee. The Company may at any time deliver to the Trustee for cancellation any Securities previously authenticated and delivered hereunder which the Company may have acquired in any manner whatsoever, and all Securities so delivered shall be cancelled promptly by the Trustee. No Securities shall be authenticated in lieu of or in exchange for any Securities cancelled as provided in this Section 3.9, except as expressly permitted by or pursuant to this Indenture. All cancelled Securities held by the Trustee shall be disposed of by the Trustee in accordance with its customary procedures.

### Section 3.10 Computation of Interest

Except as otherwise provided in or pursuant to this Indenture, or in any Security, interest on the Securities shall be computed on the basis of a 360-day year of twelve 30-day months.

### Section 3.11 CUSIP and ISIN Numbers

The Company in issuing the Securities may use "CUSIP" and "ISIN" numbers (if then generally in use), and, if so, the Trustee shall use CUSIP and ISIN numbers in notices of redemption as a convenience to Holders; provided that any such notice may state that no representation is made as to the correctness of such numbers either as printed on the Securities or

as contained in any notice of a redemption and that reliance may be placed only on the other identification numbers printed on the Securities, and any such redemption shall not be affected by any defect in or omission of such numbers. The Company will promptly notify the Trustee of any change in the CUSIP and ISIN numbers.

## ARTICLE 4

### SATISFACTION AND DISCHARGE OF INDENTURE

#### Section 4.1 Satisfaction and Discharge

Upon the direction of the Company by a Company Order, this Indenture shall cease to be of further effect with respect to any series of Securities specified in such Company Order and the Trustee, on receipt of a Company Order, at the expense of the Company, shall execute proper instruments acknowledging satisfaction and discharge of this Indenture as to such series, when

(1) either

(a) all Securities of such series theretofore authenticated and delivered have been delivered to the Trustee for cancellation (other than (i) Securities of such series that have been destroyed, lost or stolen and have been replaced or paid as provided in Section 3.6 and (ii) Securities of such series the payment of money for which has theretofore been deposited in trust or segregated and held in trust by the Company and thereafter repaid to the Company or discharged from such trust, as provided in Section 10.3); or

(b) all Securities of such series not theretofore delivered to the Trustee for cancellation:

(i) have become due and payable, or

(ii) will become due and payable at their Stated Maturity within one year, or

(iii) if redeemable at the option of the Company, are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption by the Trustee in the name, and at the expense, of the Company,

and the Company, in the case of (i), (ii) or (iii) above, has deposited or caused to be deposited with the Trustee as trust funds in trust for such purpose, (x) money in an amount or (y) Government Obligations that through the payment of interest and principal in respect thereof in accordance with their terms will provide, not later than one day before the due date of any payment, in the opinion of a nationally recognized Independent Registered Public Accounting Firm or investment bank expressed in a written certification thereof delivered to the Trustee, money in the amount, or (z) a combination of (x) and (y) in an amount in the Currency in which such series of Securities are payable sufficient to pay and discharge the entire indebtedness on such Securities not theretofore delivered to the Trustee for cancellation, including the principal of, any premium and interest on, and any Additional Amounts with respect to such Securities then determinable, to the date of such deposit (in the case of Securities which have become due and payable) or to the Maturity or the Redemption Date thereof, as the case may be;



(2) the Company has paid or caused to be paid all other sums payable hereunder by the Company with respect to the Outstanding Securities of such series; and

(3) the Company has delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that all conditions precedent herein provided for relating to the satisfaction and discharge of this Indenture as to such series have been complied with.

In the event there are Securities of two or more series hereunder, the Trustee shall be required to execute an instrument acknowledging satisfaction and discharge of this Indenture only if requested to do so with respect to Securities of such series as to which it is Trustee and if the other conditions thereto are met.

Notwithstanding the satisfaction and discharge of this Indenture with respect to any series of Securities, the obligations of the Company to the Trustee under Section 6.7, the obligations of the Trustee under Section 4.3, if money, Government Obligations or a combination thereof shall have been deposited with the Trustee pursuant to subclause (b) of clause (1) of this Section 4.1, the obligations of the Company and the Trustee with respect to the Securities of such series under Section 3.4, Section 3.5, Section 3.6, Section 10.2 and Section 10.3, and the obligations of the Company with respect to the payment of Additional Amounts, if any, with respect to such Securities as contemplated by Section 10.4 (but only to the extent that the Additional Amounts payable with respect to such Securities exceed the amount deposited in respect of such Additional Amounts pursuant to Section 4.1(1)(b)), and with respect to any rights to convert or exchange such Securities into Common Stock or other securities, cash or other property shall survive such satisfaction and discharge.

#### Section 4.2 Defeasance and Covenant Defeasance

(1) Unless pursuant to Section 3.1, either or both of (i) defeasance of the Securities of a series under clause (2) of this Section 4.2 shall not be applicable with respect to the Securities of such series or (ii) covenant defeasance of the Securities of a series under clause (3) of this Section 4.2 shall not be applicable with respect to the Securities of such series, then such provisions, together with the other provisions of this Section 4.2 (with such modifications thereto as may be specified pursuant to Section 3.1 with respect to any Securities), shall be applicable to such Securities, and the Company may at its option by Board Resolution, at any time, with respect to such Securities, elect to have Section 4.2(2) or Section 4.2(3) be applied to such Outstanding Securities upon compliance with the conditions set forth below in this Section 4.2.

(2) Upon the Company's exercise of the above option applicable to this Section 4.2(2) with respect to any Securities of or within a series, the Company shall be deemed to have been discharged from its obligations with respect to such Outstanding Securities on the date the conditions set forth in clause (4) of this Section 4.2 are satisfied (hereinafter, "defeasance"). For this purpose, such defeasance means that the Company shall be deemed to have paid and discharged the entire indebtedness represented by such Outstanding Securities, which shall thereafter be deemed to be "Outstanding" only for the purposes of the Sections of this Indenture

referred to in clauses (i) and (ii) below, and to have satisfied all of its other obligations under such Securities and this Indenture insofar as such Securities are concerned (and the Trustee, at the expense of the Company, shall execute proper instruments acknowledging the same), except for the following which shall survive until otherwise terminated or discharged hereunder: (i) the rights of Holders of such Outstanding Securities to receive, solely from the trust fund described in clause (4) of this Section 4.2 and as more fully set forth in such Section, payments in respect of the principal of (and premium, if any) and interest, if any, on, and Additional Amounts, if any, with respect to, such Securities when such payments are due, and any rights of such Holder to convert or exchange such Securities into Common Stock or other securities, cash or other property, (ii) the obligations of the Company and the Trustee with respect to such Securities under Section 3.4, Section 3.5, Section 3.6, Section 10.2 and Section 10.3 and the obligations of the Company with respect to the payment of Additional Amounts, if any, on such Securities as contemplated by Section 10.4 (but only to the extent that the Additional Amounts payable with respect to such Securities exceed the amount deposited in respect of such Additional Amounts pursuant to Section 4.2(4)(a) below), and with respect to any rights to convert or exchange such Securities into Common Stock or other securities, cash or other property, (iii) the rights, powers, trusts, duties and immunities of the Trustee hereunder and (iv) this Section 4.2. The Company may exercise its option under this Section 4.2(2) notwithstanding the prior exercise of its option under clause (3) of this Section 4.2 with respect to such Securities.

(3) Upon the Company's exercise of the above option applicable to this Section 4.2(3) with respect to any Securities of or within a series, (i) the Company shall be released from its obligations to comply with any term, provision or condition under Section 8.1 with respect to such Securities (and, to the extent specified pursuant to Section 3.1, any other restrictive covenant added for the benefit of such Securities) and (ii) unless otherwise specified pursuant to Section 3.1, the occurrence of any event specified in Section 5.1(7) shall not be deemed to be an Event of Default, in each case on and after the date the conditions set forth in clause (4) of this Section 4.2 are satisfied (hereinafter, "covenant defeasance"), and such Securities shall thereafter be deemed to be not "Outstanding" for the purposes of any direction, waiver, consent or declaration or Act of Holders (and the consequences of any thereof) in connection with any such covenant, but shall continue to be deemed "Outstanding" for all other purposes hereunder. For this purpose, such covenant defeasance means that, with respect to such Outstanding Securities, the Company may omit to comply with, and shall have no liability in respect of, any term, condition or limitation set forth in any such covenant, whether directly or indirectly, by reason of any reference elsewhere herein to any covenant or by reason of reference in any such covenant to any other provision herein or in any other document and such omission to comply shall not constitute a default or an Event of Default under Section 5.1(4), Section 5.1(7) or otherwise, as the case may be, insofar as it relates to Section 8.1 and, to the extent specified pursuant to Section 3.1, any other restrictive covenant added for the benefit of such Security, but, except as specified above, the remainder of this Indenture and such Securities shall be unaffected thereby; provided that the obligations of the Company with respect to the payment of Additional Amounts, if any, on such Securities as contemplated by Section 10.4 shall remain unsatisfied only to the extent that the Additional Amounts payable with respect to such Securities exceed the amount deposited in respect of such Additional Amounts pursuant to Section 4.2(4)(a) below; provided, further, that notwithstanding a covenant defeasance with respect to Section 8.1, any Person to whom a sale, assignment, transfer, lease, conveyance or other disposition is made pursuant to Section 8.1, shall as a condition to such sale, assignment, transfer, lease, conveyance or other disposition, assume by an indenture supplemental hereto in form satisfactory to the Trustee, executed by such successor Person and delivered to the Trustee, the obligations of the Company to the Trustee under Section 6.7 and the second to the last paragraph of this Section 4.2.

(4) The following shall be the conditions to the application of clause (2) or (3) of this Section 4.2 to any Outstanding Securities of a series:

(a) The Company shall irrevocably have deposited or caused to be deposited with the Trustee (or another trustee satisfying the requirements of Section 6.8 who shall agree to comply with the provisions of this Section 4.2 applicable to it) as trust funds in trust for the purpose of making the following payments, specifically pledged as security for, and dedicated solely to, the benefit of the Holders of such Securities, (1) an amount in Dollars or in such Foreign Currency in which such Securities are then specified as payable at Stated Maturity, or (2) Government Obligations applicable to such Securities (determined on the basis of the Currency in which such Securities are then specified as payable at Stated Maturity) which through the scheduled payment of principal and interest in respect thereof in accordance with their terms will provide, not later than one day before the due date of any payment of principal of (and premium, if any) and interest, if any, on such Securities, money in an amount, or (3) a combination thereof, in any case, in an amount, sufficient, without consideration of any reinvestment of such principal and interest, in the opinion of a nationally recognized Independent Registered Public Accounting Firm or investment bank expressed in a written certification thereof delivered to the Trustee, to pay and discharge, and which shall be applied by the Trustee (or other qualifying trustee) to pay and discharge, (y) the principal of (and premium, if any) and interest or Additional Amounts then determinable, if any, on such Outstanding Securities at the Maturity of such principal or installment of principal or interest, provided that the Company shall specify whether such Outstanding Securities are being defeased to Stated Maturity or to the Redemption Date and (z) any mandatory sinking fund payments or analogous payments applicable to such Outstanding Securities on the day on which such payments are due and payable in accordance with the terms of this Indenture and of such Securities.

(b) Such defeasance or covenant defeasance shall not result in a breach or violation of, or constitute a default under, this Indenture or any other material agreement or instrument to which the Company is a party or by which it is bound.

(c) No Event of Default or event that, with notice or lapse of time or both, would become an Event of Default with respect to such Securities shall have occurred and be continuing on the date of such deposit (other than an Event of Default resulting from non-compliance with any covenant from which the Company is released upon effectiveness of such defeasance or covenant defeasance, as applicable).

(d) In the case of an election under clause (2) of this Section 4.2, the Company shall have delivered to the Trustee an Opinion of Counsel stating that:

(i) the Company has received from the Internal Revenue Service a letter ruling, or there has been published by the Internal Revenue Service a Revenue Ruling, or

(ii) since the date of execution of this Indenture, there has been a change in the applicable federal income tax law,

in either case to the effect that, and based thereon such opinion shall confirm that, subject to customary assumptions and exclusions, the Holders of such Outstanding Securities will not recognize income, gain or loss for federal income tax purposes as a result of such defeasance and will be subject to federal income tax on the same amounts, in the same manner and at the same times as would have been the case if such defeasance had not occurred.

(e) In the case of an election under clause (3) of this Section 4.2, the Company shall have delivered to the Trustee an Opinion of Counsel to the effect that, subject to customary assumptions and exclusions, the Holders of such Outstanding Securities will not recognize income, gain or loss for federal income tax purposes as a result of such covenant defeasance and will be subject to federal income tax on the same amounts, in the same manner and at the same times as would have been the case if such covenant defeasance had not occurred.

(f) The Company shall have delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that all conditions precedent to the defeasance or covenant defeasance under clause (2) or (3) of this Section 4.2 (as the case may be) have been complied with.

(g) If the Securities are to be redeemed prior to their Stated Maturity (other than from mandatory sinking fund payments or analogous payments), notice of such redemption shall have been duly given pursuant to this Indenture or provision therefor satisfactory to the Trustee shall have been made.

(h) Notwithstanding any other provisions of this Section 4.2(4), such defeasance or covenant defeasance shall be effected in compliance with any additional or substitute terms, conditions or limitations which may be imposed on the Company in connection therewith pursuant to Section 3.1.

The Company shall pay and indemnify the Trustee against any tax, fee or other charge, imposed on or assessed against the Government Obligations deposited pursuant to this Section 4.2 or the principal or interest received in respect thereof other than any such tax, fee or other charge which by law is for the account of the Holders of such Outstanding Securities.

Anything in this Section 4.2 to the contrary notwithstanding, the Trustee shall deliver or pay to the Company from time to time upon Company Request any money or Government Obligations (or other property and any proceeds therefrom) held by it as provided in clause (4) of this Section 4.2 which, in the opinion of a nationally recognized Independent Registered Public Accounting Firm or investment bank expressed in a written certification thereof delivered to the Trustee, are in excess of the amount thereof which would then be required to be deposited to effect a defeasance or covenant defeasance, as applicable, in accordance with this Section 4.2.

### Section 4.3 Application of Trust Money

Subject to the provisions of the last paragraph of Section 10.3, all money and Government Obligations (including the proceeds thereof) deposited with the Trustee or other qualifying trustee (solely for purposes of this Section 4.3, the Trustee and any such other trustee are referred to collectively as the “Trustee”) pursuant to Section 4.1 or Section 4.2 in respect of any Outstanding Securities of any series shall be held in trust and applied by the Trustee, in accordance with the provisions of the Securities and this Indenture, to the payment, either directly or through any Paying Agent (including the Company acting as its own Paying Agent) as the Trustee may determine, to the Persons entitled thereto, of the principal, premium, if any, interest and Additional Amounts, if any, for whose payment such money has or Government Obligations have been deposited with or received by the Trustee; but such money and Government Obligations need not be segregated from other funds except to the extent required by law.

### Section 4.4 Qualifying Trustee

Any trustee appointed pursuant to Section 4.2 for the purpose of holding trust funds deposited pursuant to that Section shall be appointed under an agreement in form acceptable to the Trustee and shall provide to the Trustee a certificate of such trustee, upon which certificate the Trustee shall be entitled to conclusively rely, that all conditions precedent provided for herein to the related defeasance or covenant defeasance have been complied with. In no event shall the Trustee be liable for any acts or omissions of said trustee.

## ARTICLE 5

### REMEDIES

#### Section 5.1 Events of Default

“Event of Default,” wherever used herein with respect to Securities of any series, means any one of the following events (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body), unless such event is specifically deleted or modified in or pursuant to the supplemental indenture, Board Resolution or Officer’s Certificate establishing the terms of such series pursuant to this Indenture:

- (1) default for 30 days in the payment when due of any interest on or any Additional Amount in respect of any Security of such series;
- (2) default in the payment of the principal of or any premium on any Security of such series when the principal or premium becomes due and payable at Maturity;
- (3) default in the deposit of any sinking fund payment when and as due by the terms of any Security of such series, subject to any cure period specified in any Security of such series;
- (4) failure on the part of the Company duly to observe or perform any other of the covenants or agreements (other than those described in clause (1), (2) or (3) above) on the part of the Company with respect to that series contained in such Securities or otherwise established with respect to that series of Securities pursuant to Section 3.1 hereof or contained in this Indenture (other than a covenant or agreement that has been expressly included in this Indenture

solely for the benefit of one or more series of Securities other than such series) and such failure shall continue for a period of 60 days after the date on which written notice of such failure, requiring the same to be remedied and stating that such notice is a "Notice of Default" shall have been given to the Company by the Trustee, upon direction of Holders of at least 25% in principal amount of the Outstanding Securities of that series; provided, however, that if such failure is not capable of cure within such 60-day period, such 60-day period shall be automatically extended by an additional 60 days so long as (i) such failure is subject to cure, and (ii) the Company is using commercially reasonable efforts to cure such failure; and provided, further, that a failure to comply with any such other agreement in this Indenture that results from a change in GAAP shall not be deemed to be an Event of Default;

(5) a decree or order by a court having jurisdiction in the premises shall have been entered adjudging the Company bankrupt or insolvent, or approving as properly filed a petition seeking liquidation or reorganization of the Company under any applicable bankruptcy, insolvency, reorganization or other similar law, and such decree or order shall have continued unvacated and unstayed for a period of 90 days; an involuntary case shall be commenced under any applicable bankruptcy, insolvency, reorganization or other similar law in respect of the Company and shall continue undismissed for a period of 90 days or an order for relief in such case shall have been entered and such order shall have remained in force unvacated and unstayed for a period of 90 days; or a decree or order of a court having jurisdiction in the premises shall have been entered for the appointment on the ground of insolvency or bankruptcy of a receiver, custodian, liquidator, trustee or assignee in bankruptcy or insolvency of the Company or of its property, or for the winding up or liquidation of its affairs, and such decree or order shall have remained in force unvacated and unstayed for a period of 90 days;

(6) the Company shall institute proceedings to be adjudicated a voluntary bankrupt, shall consent to the filing of a bankruptcy proceeding against it, shall file a petition or answer or consent seeking liquidation or reorganization under any applicable bankruptcy, insolvency, reorganization or other similar law, shall consent to the filing of any such petition or shall consent to the appointment on the ground of insolvency or bankruptcy of a receiver or custodian or liquidator or trustee or assignee in bankruptcy or insolvency of it or of its property, or shall make a general assignment for the benefit of creditors; or

(7) any other Event of Default provided in or pursuant to the Indenture with respect to Securities of the series, provided that any such Event of Default that results from a change in GAAP shall not be deemed to be an Event of Default.

#### Section 5.2 Acceleration of Maturity; Rescission and Annulment

If an Event of Default specified in clause (5) or (6) of the definition thereof above occurs, the principal of all Securities shall automatically become due and payable without further action or notice, anything contained in this Indenture or the Securities of each series or established with respect to each series pursuant to Section 3.1 to the contrary notwithstanding. If (a) upon the occurrence and continuance of an Event of Default specified in clause (1) or (2) of the definition thereof, the Company and the Trustee receive notice in writing that Holders of not less than 25% in aggregate principal amount of the Outstanding Securities of that series, or (b) upon the occurrence and continuance of any other Event of Default other than an Event of Default

specified in clause (1), (2), (5) and (6) of the definition thereof, the Company and the Trustee receive notice in writing that Holders of not less than a majority in aggregate principal amount of the Outstanding Securities of that series have declared the principal (or, in the case of discounted Securities, the amount specified in the terms thereof) of all Securities of that series to be due and payable immediately, then upon any such declaration the same shall become and shall be immediately due and payable, anything contained in this Indenture or in the Securities of that series or established with respect to that series to the contrary notwithstanding.

At any time after a declaration of acceleration or automatic acceleration with respect to the Securities of any series has been made and before a judgment or decree for payment of the money due has been obtained by the Trustee as hereafter in this Article 5 provided, the Holders of not less than a majority in principal amount of the Outstanding Securities of such series, by written notice to the Company and the Trustee, may rescind and annul the declaration or automatic acceleration and its consequences if:

(1) the Company has paid or deposited with the Trustee a sum of money sufficient to pay (A) all overdue installments of interest on all Securities of such series and any Additional Amounts payable with respect thereto, (B) the principal of and any premium on any Securities of the series which have become due otherwise than by the declaration of acceleration or automatic acceleration and interest thereon and any Additional Amounts with respect thereto at the rate or rates borne by or provided in such Securities, (C) interest upon overdue interest at the rate or rates prescribed therefor in such Securities and (D) all sums paid or advanced by the Trustee hereunder and the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel; and

(2) all Events of Default with respect to Securities of such series, other than the non-payment of the principal of, any premium and interest on, and any Additional Amounts with respect to, Securities of such series which shall have become due solely by the acceleration, shall have been cured or waived as provided in Section 5.3.

### Section 5.3 Collection of Indebtedness and Suits for Enforcement by Trustee

The Company covenants that if:

(1) default is made in the payment of any installment of interest on any Security, or any Additional Amounts payable with respect thereto, when such interest or Additional Amounts shall have become due and payable and such default continues for any cure period specified with respect to such Security;

(2) default is made in the payment of any principal of or premium, if any, on, or any Additional Amounts payable in respect of any principal of or premium, if any, on any Security at its Maturity; or

(3) default is made in the deposit of any sinking fund payment, when and as due by the terms of any Security and such default continues for any cure period specified with respect to such Security;

the Company shall, upon demand of the Trustee, pay to the Trustee, for the benefit of the Holders of such Securities, the whole amount of money then due and payable with respect to such Securities, with interest upon the overdue principal, any premium and, to the extent that payment of such interest shall be legally enforceable, upon any overdue installments of interest and Additional Amounts at the rate or rates borne by or provided for in such Securities, and, in addition thereto, such further amount of money as shall be sufficient to cover the costs and expenses of collection, including the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel and all other amounts due to the Trustee under Section 6.7.

If the Company fails to pay the money it is required to pay the Trustee pursuant to the preceding paragraph forthwith upon the demand of the Trustee, the Trustee, in its own name and as trustee of an express trust, may institute a judicial proceeding for the collection of the money so due and unpaid, and may prosecute such proceeding to judgment or final decree, and may enforce the same against the Company or any other obligor upon such Securities and collect the monies adjudged or decreed to be payable in the manner provided by law out of the property of the Company or any other obligor upon such Securities, wherever situated.

If an Event of Default with respect to the Securities of any series occurs and is continuing, the Trustee may, and if (A) an Event of Default specified in clause (1), (2), (5) or (6) of the definition thereof occurs and is continuing, and Holders of not less than 25% in aggregate principal amount of the Outstanding Securities of such series direct, or (B) an Event of Default other than an Event of Default specified in clause (1), (2), (5) or (6) of the definition thereof occurs and is continuing, and Holders of not less than a majority in aggregate principal amount of the Outstanding Securities of such series direct, so long as such Holders shall have provided the Trustee with such indemnity as it shall require and subject to the provisions of Section 5.12, the Trustee shall, proceed to protect and enforce its rights and the rights of the Holders of Securities of such series by such appropriate judicial proceedings to protect and enforce any such rights, whether for the specific enforcement of any covenant or agreement in this Indenture or such Securities or in aid of the exercise of any power granted herein or therein, or to enforce any other proper remedy.

#### Section 5.4 Trustee May File Proofs of Claim

In case of the pendency of any receivership, insolvency, liquidation, bankruptcy, reorganization, arrangement, adjustment, composition or other judicial proceeding relative to the Company or any other obligor upon the Securities or the property of the Company or such other obligor or their creditors, the Trustee (irrespective of whether the principal of the Securities shall then be due and payable as therein expressed or by declaration or otherwise and irrespective of whether the Trustee shall have made any demand on the Company for the payment of any overdue principal, premium, interest or Additional Amounts) shall be entitled and empowered, by intervention in such proceeding or otherwise,

(1) to file and prove a claim for the whole amount, or such lesser amount as may be provided for in the Securities of such series, of the principal and any premium, interest and Additional Amounts owing and unpaid in respect of the Securities and to file such other papers or documents as may be necessary or advisable in order to have the claims of the Trustee (including any claim for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents or counsel) and of the Holders of Securities allowed in such judicial proceeding, and



(2) to collect and receive any monies or other property payable or deliverable on any such claims and to distribute the same;

and any custodian, receiver, assignee, trustee, liquidator, sequestrator or other similar official in any such judicial proceeding is hereby authorized by each Holder of Securities to make such payments to the Trustee and, in the event that the Trustee shall consent to the making of such payments directly to the Holders of Securities, to pay to the Trustee any amount due to it for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel and any other amounts due the Trustee under Section 6.7.

Nothing herein contained shall be deemed to authorize the Trustee to authorize or consent to or accept or adopt on behalf of any Holder of a Security any plan of reorganization, arrangement, adjustment or composition affecting the Securities or the rights of any Holder thereof, or to authorize the Trustee to vote in respect of the claim of any Holder of a Security in any such proceeding.

#### Section 5.5 Trustee May Enforce Claims without Possession of Securities

All rights of action and claims under this Indenture or any of the Securities may be prosecuted and enforced by the Trustee without the possession of any of the Securities or the production thereof in any proceeding relating thereto, and any such proceeding instituted by the Trustee shall be brought in its own name as trustee of an express trust, and any recovery or judgment, after provision for the payment of the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel, shall be for the ratable benefit of each and every Holder of a Security in respect of which such judgment has been recovered.

#### Section 5.6 Application of Money Collected

Any money collected by the Trustee pursuant to this Article 5 with respect to Securities of any series shall be applied in the following order, at the date or dates fixed by the Trustee and, in case of the distribution of such money on account of principal, or any premium, interest or Additional Amounts, upon presentation of such Securities, and the notation thereon of the payment if only partially paid and upon surrender thereof if fully paid:

FIRST: To the payment of all amounts due the Trustee and any predecessor Trustee under Section 6.7;

SECOND: To the payment of the amounts then due and unpaid upon such Securities for principal and any premium, interest and Additional Amounts in respect of which or for the benefit of which such money has been collected, ratably, without preference or priority of any kind, according to the aggregate amounts due and payable on such Securities for principal and any premium, interest and Additional Amounts, respectively; and

THIRD: The balance, if any, to the Company.

### Section 5.7 Limitations on Suits

No Holder of any Security of any series shall have any right to institute any proceeding, judicial or otherwise, with respect to this Indenture, or for the appointment of a receiver or trustee, or for any other remedy hereunder, unless:

(1) such Holder has previously given written notice to the Trustee of a continuing Event of Default with respect to the Securities of such series;

(2) (a) in the case of an Event of Default specified in clause (1), (2), (5) and (6) of the definition thereof, Holders of not less than 25% in aggregate principal amount of the Outstanding Securities of such series, or (b) in the case of an Event of Default other than as specified in clause (1), (2), (5) and (6) of the definition thereof, Holders of not less than a majority in aggregate principal amount of the Outstanding Securities of such series, shall have made written request to the Trustee to institute proceedings in respect of such Event of Default in its own name as Trustee hereunder;

(3) such Holder or Holders have offered to the Trustee indemnity satisfactory to it against the costs, expenses and liabilities to be incurred in compliance with such request;

(4) the Trustee for 60 days after its receipt of such notice, request and offer of indemnity has failed to institute any such proceeding, make such appointment or seek any other remedy; and

(5) no direction inconsistent with such written request has been given to the Trustee during such 60-day period by the Holders of a majority in principal amount of the Outstanding Securities of such series;

it being understood and intended that no one or more of such Holders shall have any right in any manner whatever by virtue of, or by availing of, any provision of this Indenture or any Security to affect, disturb or prejudice the rights of any other such Holders or Holders of Securities of any other series, or to obtain or to seek to obtain priority or preference over any other Holders or to enforce any right under this Indenture, except in the manner herein provided and for the equal and ratable benefit of all such Holders.

### Section 5.8 Unconditional Right of Holders to Receive Principal and Any Premium, Interest and Additional Amounts

Notwithstanding any other provision in this Indenture, the Holder of any Security shall have the right, which is absolute and unconditional, to receive payment of the principal of, any premium and (subject to Section 3.5 and Section 3.7) interest on, and any Additional Amounts with respect to, such Security, on the respective Stated Maturity or Maturities therefor specified in such Security (or, in the case of redemption, on the Redemption Date or, in the case of repayment at the option of such Holder if provided in or pursuant to this Indenture, on the date such repayment is due) and to institute suit for the enforcement of any such payment, and such right shall not be impaired without the consent of such Holder.

#### Section 5.9 Restoration of Rights and Remedies

If the Trustee or any Holder of a Security has instituted any proceeding to enforce any right or remedy under this Indenture and such proceeding has been discontinued or abandoned for any reason, or has been determined adversely to the Trustee or to such Holder, then and in every such case the Company, the Trustee and each such Holder shall, subject to any determination in such proceeding, be restored severally and respectively to their former positions hereunder, and thereafter all rights and remedies of the Trustee and each such Holder shall continue as though no such proceeding had been instituted.

#### Section 5.10 Rights and Remedies Cumulative

Except as otherwise provided with respect to the replacement or payment of mutilated, destroyed, lost or stolen Securities in the last paragraph of Section 3.6, no right or remedy herein conferred upon or reserved to the Trustee or to each and every Holder of a Security is intended to be exclusive of any other right or remedy, and every right and remedy, to the extent permitted by law, shall be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not, to the extent permitted by law, prevent the concurrent assertion or employment of any other appropriate right or remedy.

#### Section 5.11 Delay or Omission Not Waiver

No delay or omission of the Trustee or of any Holder of any Security to exercise any right or remedy accruing upon any Event of Default shall impair any such right or remedy or constitute a waiver of any such Event of Default or an acquiescence therein. Every right and remedy given by this Article 5 or by law to the Trustee or to any Holder of a Security may be exercised from time to time, and as often as may be deemed expedient, by the Trustee or by such Holder, as the case may be.

#### Section 5.12 Control by Holders of Securities

The Holders of a majority in principal amount of the Outstanding Securities of any series shall have the right to direct the time, method and place of conducting any proceeding for any remedy available to the Trustee or exercising any trust or power conferred on the Trustee with respect to the Securities of such series, provided that:

- (1) such direction shall not be in conflict with any rule of law or with this Indenture or with the Securities of any series and would not involve the Trustee in personal liability;
- (2) the Trustee may take any other action deemed proper by the Trustee which is not inconsistent with such direction; and
- (3) such direction is not unduly prejudicial to the rights of the other Holders of Securities of such series not joining in such action.

### Section 5.13 Waiver of Past or Existing Defaults

The Holders of not less than a majority in principal amount of the Outstanding Securities of any series by notice to the Trustee may on behalf of the Holders of all the Securities of such series waive any past or existing default or Event of Default hereunder with respect to such series and its consequences, except:

(1) a continuing default or Event of Default in the payment of the principal of, any premium or interest on, or any Additional Amounts with respect to, any Security of such series; or

(2) a default or Event of Default in respect of a covenant or provision hereof which under Article 9 hereof cannot be modified or amended without the consent of the Holder of each Outstanding Security of such series affected.

Upon any such waiver, such default or Event of Default with respect to such series shall cease to exist, and any Event of Default with respect to such series arising therefrom shall be deemed to have been cured, for every purpose of this Indenture; but no such waiver shall extend to any subsequent or other default with respect to such series or impair any right with respect to such series consequent thereon.

### Section 5.14 Waiver of Stay or Extension Laws

The Company covenants that (to the extent that it may lawfully do so) it will not at any time insist upon, or plead, or in any manner whatsoever claim or take the benefit or advantage of, any stay or extension law wherever enacted, now or at any time hereafter in force, which may affect the covenants or the performance of this Indenture; and the Company expressly waives (to the extent that it may lawfully do so) all benefit or advantage of any such law and covenants that it will not hinder, delay or impede the execution of any power herein granted to the Trustee, but will suffer and permit the execution of every such power as though no such law had been enacted.

### Section 5.15 Undertaking for Costs

All parties to this Indenture agree, and each Holder of any Security by his or her acceptance thereof shall be deemed to have agreed, that any court may in its discretion require, in any suit for the enforcement of any right or remedy under this Indenture, or in any suit against the Trustee for any action taken or omitted by it as Trustee, the filing by any party litigant in such suit of any undertaking to pay the costs of such suit, and that such court may in its discretion assess reasonable costs, including reasonable attorneys' fees and expenses, against any party litigant in such suit having due regard to the merits and good faith of the claims or defenses made by such party litigant; but the provisions of this Section 5.15 shall not apply to any suit instituted by the Trustee, to any suit instituted by any Holder, or group of Holders, holding in the aggregate more than 10% in principal amount of Outstanding Securities of any series, or to any suit instituted by any Holder for the enforcement of the payment of the principal of (or premium, if any) or interest, if any, on or Additional Amounts, if any, with respect to any Security on or after the respective Stated Maturities expressed in such Security (or, in the case of redemption, on or after the Redemption Date, and, in the case of repayment, on or after the date for repayment) or for the enforcement of the right, if any, to convert or exchange any Security into Common Stock or other securities, cash or other property in accordance with its terms.

## ARTICLE 6

### THE TRUSTEE

#### Section 6.1 Certain Duties and Responsibilities

The duties and responsibilities of the Trustee shall be as provided by the Trust Indenture Act. Except during the continuance of an Event of Default with respect to the Securities of a series of which a Responsible Officer has actual knowledge, the Trustee undertakes to perform such duties and only such duties as are specifically set forth in this Indenture with respect to such Securities, and no implied covenants or obligations shall be read into this Indenture with respect to such Securities against the Trustee. In case an Event of Default of which a Responsible Officer has actual knowledge with respect to the Securities of a series has occurred (which has not been cured or waived), the Trustee shall exercise the rights and powers vested in it by this Indenture, and use the same degree of care and skill in its exercise, with respect to such Securities, as a prudent person would exercise or use under the circumstances in the conduct of such person's own affairs. Notwithstanding the foregoing, no provision of this Indenture shall require the Trustee to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers. Whether or not therein expressly so provided, every provision of this Indenture relating to the conduct or affecting the liability of or affording protection to the Trustee shall be subject to the provisions of this Section 6.1.

#### Section 6.2 Certain Rights of Trustee

Subject to the provisions of Section 6.1:

(1) the Trustee may conclusively rely and shall be fully protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, bond, debenture, note, coupon, other evidence of indebtedness or other paper or document (whether in its original or facsimile form) believed by it to be genuine and to have been signed or presented by the proper party or parties;

(2) any request or direction of the Company mentioned herein shall be sufficiently evidenced by a Company Request or a Company Order (in each case, other than delivery of any Security to the Trustee for authentication and delivery pursuant to Section 3.3 which shall be sufficiently evidenced as provided therein) and any resolution of the Board of Directors of the Company may be sufficiently evidenced by a Board Resolution;

(3) whenever in the administration of this Indenture the Trustee shall deem it desirable that a matter be proved or established prior to taking, suffering or omitting any action hereunder, the Trustee (unless other evidence shall be herein specifically prescribed) may, in the absence of bad faith on its part, request and conclusively rely upon an Officer's Certificate;

(4) the Trustee may consult with counsel of its selection and the advice of such counsel or any Opinion of Counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon;

(5) the Trustee shall be under no obligation to exercise any of the rights or powers vested in it by or pursuant to this Indenture or to institute, conduct or defend any litigation hereunder or in relation hereto at the request or direction of any of the Holders of Securities of any series pursuant to this Indenture, unless such Holders shall have offered to the Trustee security or indemnity reasonably satisfactory to it against the costs, expenses and liabilities which might be incurred by it in compliance with such request or direction;

(6) the Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, bond, debenture, coupon, note, other evidence of indebtedness or other paper or document, but the Trustee, in its discretion, may but shall not be obligated to make such further inquiry or investigation into such facts or matters as it may see fit, and, if the Trustee shall determine to make such further inquiry or investigation, it shall be entitled to examine, during business hours and upon reasonable notice, the books, records and premises of the Company, personally or by agent or attorney at the expense of the Company and shall incur no liability or additional liability of any kind by reason of such inquiry or investigation;

(7) the Trustee may execute any of the trusts or powers hereunder or perform any duties hereunder either directly or by or through agents, attorneys or custodians and the Trustee shall not be responsible for any misconduct or negligence on the part of any agent, attorney or custodians appointed with due care by it hereunder;

(8) the Trustee shall not be liable in its individual capacity for any action taken or suffered to be taken, unless it shall be proved that the Trustee was negligent, acted in bad faith or engaged in willful misconduct;

(9) the Authenticating Agent, Paying Agent, and Security Registrar shall have the same protections as the Trustee set forth hereunder;

(10) the Trustee shall not be liable in its individual capacity with respect to any action taken, suffered or omitted to be taken by it in good faith in accordance with this Indenture, and, to the extent not so provided herein, with respect to any act requiring the Trustee to exercise its own discretion, relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under this Indenture or any Securities, unless it shall be proved that, in connection with any such action taken, suffered or omitted or any such act, the Trustee was negligent, acted in bad faith or engaged in willful misconduct;

(11) no provision of this Indenture shall require the Trustee to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers;

(12) the Trustee shall not be charged with knowledge or required to take notice of any default or Event of Default with respect to the Securities unless either (A) a Responsible Officer shall have actual knowledge of such default or Event of Default or (B) written notice of such default or Event of Default, which references the Securities and this Indenture, shall have been given to a Responsible Officer by the Company or other obligor on such Securities or by any Holder of such Securities;

(13) the Trustee shall not be liable in its individual capacity for any action taken, suffered or omitted by it in good faith and reasonably believed by it to be authorized or within the discretion or rights or powers conferred upon it by this Indenture;

(14) the rights, privileges, protections, immunities and benefits given to the Trustee, including, without limitation, its right to be indemnified, are extended to, and shall be enforceable by, the Trustee in each of its capacities hereunder, and each agent, custodian, director, officer, employee and other Person employed to act hereunder;

(15) the Trustee may request that the Company deliver an Officer's Certificate setting forth the names of individuals and/or titles of Officers authorized at such time to take specified actions pursuant to this Indenture, which Officer's Certificate may be signed by any person authorized to sign an Officer's Certificate, including any person specified as so authorized in any such certificate previously delivered and not superseded;

(16) the permissive rights of the Trustee to take certain actions under or perform any discretionary act enumerated in this Indenture shall not be construed as a duty unless so specified herein, and the Trustee shall not be answerable for other than its negligence or willful misconduct in the performance of such action or act;

(17) the Trustee shall not be liable in its individual capacity with respect to any action taken, suffered or omitted to be taken by it in good faith in accordance with this Indenture or at the direction of the Holders of a majority in aggregate principal amount of the Outstanding Securities relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising or omitting to exercise any trust or power conferred upon the Trustee, under this Indenture;

(18) in no event shall the Trustee be liable for special, indirect or consequential loss or damage of any kind whatsoever (including but not limited to lost profits) even if the Trustee has been advised of the likelihood of such loss or damage and regardless of the form of action; and

(19) in no event shall the Trustee be responsible or liable for any failure or delay in the performance of its obligations hereunder arising out of or caused by, directly or indirectly, forces beyond its control, including, without limitation strikes, work stoppages, accidents, acts of war or terrorism, civil or military disturbances, nuclear or natural catastrophes or acts of God, and interruptions, loss or malfunctions of utilities, communications or computer (software and hardware) services; it being understood that the Trustee shall use reasonable efforts which are consistent with accepted practices in the banking industry to resume performance as soon as practicable under the circumstances.

### Section 6.3 Notice of Defaults

Within 90 days after the occurrence of any default hereunder with respect to the Securities of any series of which a Responsible Officer has actual knowledge, the Trustee shall give the Holders of Securities of such series entitled to receive reports pursuant to Section 7.3, notice of such default hereunder actually known to a Responsible Officer, unless such default shall have been cured or waived; provided, however, that, except in the case of a default in the payment of the principal of (or premium, if any), or interest, if any, on, or Additional Amounts or any sinking fund or purchase fund installment with respect to, any Security of such series, the Trustee shall be protected in withholding such notice if and so long as the board of directors, the executive committee or a trust committee of directors and/or Responsible Officers in good faith determine that the withholding of such notice is in the best interest of the Holders of Securities of such series; and provided, further, that in the case of any default of the character specified in Section 5.1(4) with respect to Securities of such series, no such notice to Holders shall be given until at least 30 days after the occurrence thereof. For the purpose of this Section, the term "default" means any event that is, or after notice or lapse of time or both would become, an Event of Default with respect to Securities of such series.

### Section 6.4 Not Responsible for Recitals or Issuance of Securities

The recitals contained herein and in the Securities, except the Trustee's certificate of authentication, shall be taken as the statements of the Company, and neither the Trustee nor any Authenticating Agent assumes any responsibility for their correctness. The Trustee makes no representations as to the validity, sufficiency or priority of this Indenture or of the Securities. Neither the Trustee nor any Authenticating Agent shall be accountable for the use or application by the Company of the Securities or the proceeds thereof. Except with respect to the authentication of Securities pursuant to Section 3.3, the Trustee shall not be responsible for the legality or the validity of this Indenture or any Securities issued or to be issued hereunder.

### Section 6.5 May Hold Securities

The Trustee, any Authenticating Agent, any Paying Agent, any Security Registrar or any other Person that may be an agent of the Trustee or the Company, in its individual or any other capacity, may become the owner or pledgee of Securities and, subject to Sections 310(b) and 311 of the Trust Indenture Act, may otherwise deal with the Company with the same rights it would have if it were not the Trustee, Authenticating Agent, Paying Agent, Security Registrar or such other Person.

### Section 6.6 Money Held in Trust

Money held by the Trustee in trust hereunder need not be segregated from other funds except to the extent required by law. The Trustee shall be under no liability for interest on any money received by it hereunder except as otherwise agreed in writing with the Company.



## Section 6.7 Compensation and Reimbursement

The Company agrees:

(1) to pay to the Trustee from time to time such compensation as shall be agreed upon from time to time in writing between the Company and the Trustee for all services rendered by the Trustee hereunder (which compensation shall not be limited by any provision of law in regard to the compensation of a trustee of an express trust);

(2) except as otherwise expressly provided herein, to reimburse the Trustee upon its request for all reasonable expenses, disbursements and advances incurred or made by the Trustee in accordance with any provision of this Indenture arising out of or in connection with the acceptance or administration of the trust or trusts hereunder (including the reasonable compensation and the expenses and disbursements of its agents and counsel), except any such expense, disbursement or advance as may be caused by the Trustee's own negligence or willful misconduct; and

(3) to fully indemnify each of the Trustee and any predecessor Trustee and its agents, officers, directors and employees for, and to hold them harmless against, any loss, liability, damage, claim or expense (including reasonable legal fees and expenses), including taxes (other than taxes based on the income of the Trustee), incurred without negligence or willful misconduct on their part, arising out of or in connection with the acceptance or administration of the trust or trusts hereunder, including the reasonable costs and expenses of defending themselves against any claim or liability (whether asserted by the Company, a Holder of Securities, or any other Person) in connection with the exercise or performance of any of their powers or duties hereunder.

As security for the performance of the payment obligations of the Company under this Section 6.7, the Trustee shall have a lien prior to the Securities of any series upon all property and funds held or collected by the Trustee as such, except funds held in trust for the payment of principal of, and premium or interest on, or any Additional Amounts with respect to, particular Securities. Such lien shall survive the resignation or removal of the Trustee and the satisfaction and discharge of this Indenture. Without prejudice to any other rights available to the Trustee under applicable law, when the Trustee incurs expenses or renders services after a default or Event of Default specified in Section 5.1(5) and 5.1(6) hereof occurs, the expenses and the compensation for the services (including the fees and expense of its agents and counsel) are intended to constitute expense of administration under U.S. Code, Title 11 or any other similar foreign, federal or state law for the relief of debtors.

Without prejudice to any other rights available to the Trustee under applicable law, to the extent permitted by law any compensation or expense incurred by the Trustee after a default specified in or pursuant to Section 5.1 is intended to constitute an expense of administration under any then applicable bankruptcy or insolvency law. "Trustee" for purposes of this Section 6.7 shall include any predecessor Trustee but the negligence or willful misconduct of any Trustee shall not affect the rights of any other Trustee under this Section 6.7.

Notwithstanding any other provision of this Indenture to the contrary, in no event shall the Trustee be liable for special, indirect or consequential damages of any kind whatsoever (including but not limited to lost profits) even if the Trustee had been advised of the likelihood of such loss or damage and regardless of the form of action.

The provisions of this Section 6.7 shall survive the satisfaction and discharge of this Indenture or the earlier resignation or removal of the Trustee and shall apply with equal force and effect to the Trustee in its capacity as Authenticating Agent, Paying Agent or Security Registrar.

Section 6.8 Corporate Trustee Required; Eligibility; Conflicting Interests

There shall at all times be a Trustee hereunder that is a Corporation or a national banking association, organized and doing business under the laws of the United States of America, any state thereof or the District of Columbia, eligible under Section 310(a)(1) of the Trust Indenture Act to act as trustee under an indenture qualified under the Trust Indenture Act and that has a combined capital and surplus (computed in accordance with Section 310(a)(2) of the Trust Indenture Act) of at least \$50,000,000 subject to supervision or examination by federal or state authority. If at any time the Trustee shall cease to be eligible in accordance with the provisions of this Section 6.8, it shall resign immediately in the manner and with the effect hereinafter specified in this Article 6.

If the Trustee has or shall acquire a conflicting interest within the meaning of the Trust Indenture Act, the Trustee shall either eliminate such interest or resign, to the extent and in the manner provided by, and subject to the provisions of, the Trust Indenture Act and this Indenture. To the extent permitted by such Act, the Trustee shall not be deemed to have a conflicting interest by virtue of being a trustee under this Indenture with respect to Securities of more than one series.

Section 6.9 Resignation and Removal; Appointment of Successor

(1) No resignation or removal of the Trustee and no appointment of a successor Trustee pursuant to this Article 6 shall become effective until the acceptance of appointment by the successor Trustee pursuant to Section 6.10.

(2) The Trustee may resign at any time with respect to the Securities of one or more series by giving written notice thereof to the Company. If the instrument of acceptance by a successor Trustee required by Section 6.10 shall not have been delivered to the Trustee within 30 days after the giving of such notice of resignation, the resigning Trustee may petition, at the expense of the Company, any court of competent jurisdiction for the appointment of a successor Trustee with respect to such series.

(3) The Trustee may be removed at any time with respect to the Securities of any series by Act of the Holders of a majority in principal amount of the Outstanding Securities of such series, delivered to the Trustee and the Company. If the instrument of acceptance by a successor Trustee required by Section 6.10 shall not have been delivered to the Trustee within 30 days after the giving of such notice of removal, the Trustee being removed may petition, at the expense of the Company, any court of competent jurisdiction for the appointment of a successor Trustee with respect to such series. The Trustee for one or more series of Securities may be removed by the Company, so long as no default or Event of Default has occurred and is continuing with respect to such series.

(4) If at any time:

(a) the Trustee shall fail to comply with the obligations imposed upon it under Section 310(b) of the Trust Indenture Act with respect to Securities of any series after written request therefor by the Company or any Holder of a Security of such series who has been a bona fide Holder of a Security of such series for at least six months;

(b) the Trustee shall cease to be eligible under Section 6.8 and shall fail to resign after written request therefor by the Company or any such Holder; or

(c) the Trustee shall become incapable of acting or shall be adjudged bankrupt or insolvent or a receiver of the Trustee or of its property shall be appointed or any public officer shall take charge or control of the Trustee or of its property or affairs for the purpose of rehabilitation, conservation or liquidation,

then, in any such case,

(i) the Company, by or pursuant to a Company Order, may remove the Trustee with respect to all Securities or the Securities of such series; or

(ii) subject to Section 5.15, any Holder of a Security who has been a bona fide Holder of a Security of such series for at least six months may, on behalf of himself and all others similarly situated, petition any court of competent jurisdiction for the removal of the Trustee with respect to all Securities of such series and the appointment of a successor Trustee or Trustees.

(5) If the Trustee shall resign, be removed or become incapable of acting, or if a vacancy shall occur in the office of Trustee for any cause, with respect to the Securities of one or more series, the Company, by or pursuant to a Company Order, shall promptly appoint a successor Trustee or Trustees with respect to the Securities of such series (it being understood that any such successor Trustee may be appointed with respect to the Securities of one or more or all of such series and that at any time there shall be only one Trustee with respect to the Securities of any particular series) and shall comply with the applicable requirements of Section 6.10. If, within one year after such resignation, removal or incapacity, or the occurrence of such vacancy, a successor Trustee with respect to the Securities of any series shall be appointed by Act of the Holders of a majority in principal amount of the Outstanding Securities of such series delivered to the Company and the retiring Trustee, the successor Trustee so appointed shall, forthwith upon its acceptance of such appointment in accordance with the applicable requirements of Section 6.10, become the successor Trustee with respect to the Securities of such series and to that extent supersede the successor Trustee appointed by the Company. If no successor Trustee with respect to the Securities of any series shall have been so appointed by the Company or the Holders of Securities and accepted appointment in the manner required by Section 6.10, any Holder of a Security who has been a bona fide Holder of a Security of such series for at least six months may, on behalf of himself and all others similarly situated, petition any court of competent jurisdiction for the appointment of a successor Trustee with respect to the Securities of such series.

(6) The Company shall give notice of each resignation and each removal of the Trustee with respect to the Securities of any series and each appointment of a successor Trustee with respect to the Securities of any series to all Holders of Securities of such series in the manner provided in Section 1.6. Each notice shall include the name of the successor Trustee with respect to the Securities of such series and the address of its Corporate Trust Office.

(7) In no event shall any retiring Trustee be liable for the acts or omissions of any successor Trustee hereunder.

#### Section 6.10 Acceptance of Appointment by Successor

(1) Upon the appointment hereunder of any successor Trustee with respect to all Securities, such successor Trustee so appointed shall execute, acknowledge and deliver to the Company and the retiring Trustee an instrument accepting such appointment, and thereupon the resignation or removal of the retiring Trustee shall become effective and such successor Trustee, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties hereunder of the retiring Trustee; but, on the request of the Company or such successor Trustee, such retiring Trustee, upon payment of its charges, shall execute and deliver an instrument transferring to such successor Trustee all the rights, powers and trusts of the retiring Trustee and, subject to Section 10.3, shall duly assign, transfer and deliver to such successor Trustee all property and money held by such retiring Trustee hereunder, subject nevertheless to its lien, if any, provided for in Section 6.7.

(2) Upon the appointment hereunder of any successor Trustee with respect to the Securities of one or more (but not all) series, the Company, the retiring Trustee and such successor Trustee shall execute and deliver an indenture supplemental hereto wherein each successor Trustee shall accept such appointment and which (a) shall contain such provisions as shall be necessary or desirable to transfer and confirm to, and to vest in, such successor Trustee all the rights, powers, trusts and duties of the retiring Trustee with respect to the Securities of that or those series to which the appointment of such successor Trustee relates, (b) if the retiring Trustee is not retiring with respect to all Securities, shall contain such provisions as shall be deemed necessary or desirable to confirm that all the rights, powers, trusts and duties of the retiring Trustee with respect to the Securities of that or those series as to which the retiring Trustee is not retiring shall continue to be vested in the retiring Trustee and (c) shall add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one Trustee, it being understood that nothing herein or in such supplemental indenture shall constitute such Trustees co-trustees of the same trust, that each such Trustee shall be trustee of a trust or trusts hereunder separate and apart from any trust or trusts hereunder administered by any other such Trustee and that no Trustee shall be responsible for any notice given to, or received by, or any act or failure to act on the part of any other Trustee hereunder, and, upon the execution and delivery of such supplemental indenture, the resignation or removal of the retiring Trustee shall become effective to the extent provided therein, such retiring Trustee shall have no further responsibility for the exercise of rights and powers or for the performance of the duties and obligations vested in the Trustee under this Indenture with respect to the Securities of that or those series to which the appointment of such successor Trustee relates other than as hereinafter expressly set forth, and such successor Trustee, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the retiring Trustee with respect to the Securities of that or those series to which the appointment of such successor Trustee relates; but, on request of the

Company or such successor Trustee, such retiring Trustee, upon payment of its charges with respect to the Securities of that or those series to which the appointment of such successor Trustee relates and subject to Section 10.3 shall duly assign, transfer and deliver to such successor Trustee, to the extent contemplated by such supplemental indenture, the property and money held by such retiring Trustee hereunder with respect to the Securities of that or those series to which the appointment of such successor Trustee relates, subject to its lien, if any, provided for in Section 6.7.

(3) Upon request of any Person appointed hereunder as a successor Trustee, the Company shall execute any and all instruments for more fully and certainly vesting in and confirming to such successor Trustee all such rights, powers and trusts.

(4) No Person shall accept its appointment hereunder as a successor Trustee unless at the time of such acceptance such successor Person shall be qualified and eligible under this Article 6.

#### Section 6.11 Merger, Conversion, Consolidation or Succession to Business

Any Corporation or national banking association into which the Trustee may be merged or converted or with which it may be consolidated, or any Corporation or national banking association resulting from any merger, conversion or consolidation to which the Trustee shall be a party, or any Corporation or national banking association succeeding to all or substantially all of the corporate trust business of the Trustee by sale or otherwise, shall be the successor of the Trustee hereunder, provided such Corporation or national banking association shall otherwise be qualified and eligible under this Article 6, in each case without the execution or filing of any paper or any further act on the part of any of the parties hereto. In case any Securities shall have been authenticated but not delivered by the Trustee then in office, any successor by merger, conversion or consolidation to such authenticating Trustee may adopt such authentication and deliver the Securities so authenticated with the same effect as if such successor Trustee had itself authenticated such Securities.

#### Section 6.12 Appointment of Authenticating Agent

The Trustee may appoint one or more Authenticating Agents acceptable to the Company with respect to one or more series of Securities which shall be authorized to act on behalf of the Trustee to authenticate Securities of that or those series issued upon original issue, exchange, registration of transfer, partial redemption or partial repayment or pursuant to Section 3.6, and Securities so authenticated shall be entitled to the benefits of this Indenture and shall be valid and obligatory for all purposes as if authenticated by the Trustee hereunder. Wherever reference is made in this Indenture to the authentication and delivery of Securities by the Trustee or the Trustee's certificate of authentication, such reference shall be deemed to include authentication and delivery on behalf of the Trustee by an Authenticating Agent and a certificate of authentication executed on behalf of the Trustee by an Authenticating Agent.

Each Authenticating Agent must be acceptable to the Company and, except as provided in or pursuant to this Indenture, shall at all times be a Corporation or national banking association that would be permitted by the Trust Indenture Act to act as trustee under an indenture qualified under the Trust Indenture Act, is authorized under applicable law and by its charter to act as an Authenticating Agent and has a combined capital and surplus (computed in accordance with Section 310 (a)(2) of the Trust Indenture Act) of at least \$50,000,000. If at any time an Authenticating Agent shall cease to be eligible in accordance with the provisions of this Section 6.12, it shall resign immediately in the manner and with the effect specified in this Section 6.12.

Any Corporation or national banking association into which an Authenticating Agent may be merged or converted or with which it may be consolidated, or any Corporation or national banking association resulting from any merger, conversion or consolidation to which such Authenticating Agent shall be a party, or any Corporation or national banking association succeeding to all or substantially all of the corporate agency or corporate trust business of an Authenticating Agent, shall be the successor of such Authenticating Agent hereunder, provided such Corporation or national banking association shall be otherwise eligible under this Section 6.12, without the execution or filing of any paper or any further act on the part of the Trustee or the Authenticating Agent.

An Authenticating Agent may resign at any time by giving written notice thereof to the Trustee and the Company. The Trustee may at any time terminate the agency of an Authenticating Agent by giving written notice thereof to such Authenticating Agent and the Company. Upon receiving such a notice of resignation or upon such a termination, or in case at any time such Authenticating Agent shall cease to be eligible in accordance with the provisions of this Section 6.12, the Trustee may appoint a successor Authenticating Agent which shall be acceptable to the Company and shall mail written notice of such appointment by first-class mail, postage prepaid, to all Holders of Registered Securities, if any, of the series with respect to which such Authenticating Agent shall serve, as their names and addresses appear in the Security Register. Any successor Authenticating Agent, upon acceptance of its appointment hereunder, shall become vested with all the rights, powers and duties of its predecessor hereunder, with like effect as if originally named as an Authenticating Agent. No successor Authenticating Agent shall be appointed unless eligible under the provisions of this Section 6.12.

The Company agrees to pay each Authenticating Agent from time to time reasonable compensation for its services under this Section 6.12 to the extent agreed in writing.

The provisions of Section 3.3, Section 6.1, Section 6.4 and Section 6.5 shall be applicable to each Authenticating Agent.

If an Authenticating Agent is appointed with respect to one or more series of Securities pursuant to this Section 6.12, the Securities of such series may have endorsed thereon, in addition to or in lieu of the Trustee's certificate of authentication, an alternate certificate of authentication in substantially the following form:

This is one of the Securities of the series designated therein referred to in the within-mentioned Indenture.

\_\_\_\_\_  
as Trustee

By: \_\_\_\_\_  
As Authenticating Agent

By: \_\_\_\_\_  
Authorized Officer

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

If all of the Securities of any series may not be originally issued at one time, and if the Trustee does not have an office capable of authenticating Securities upon original issuance located in a Place of Payment where the Company wishes to have Securities of such series authenticated upon original issuance, the Trustee, if so requested by Company Request (which writing need not be accompanied by or contained in an Officer's Certificate), shall appoint in accordance with this Section 6.12 (and subject to such procedures as shall be acceptable to the Trustee) an Authenticating Agent having an office in a Place of Payment designated by the Company with respect to such series of Securities.

## ARTICLE 7

### HOLDERS LISTS AND REPORTS BY TRUSTEE AND COMPANY

#### Section 7.1 Company to Furnish Trustee Names and Addresses of Holders

In accordance with Section 312(a) of the Trust Indenture Act, the Company shall furnish or cause to be furnished to the Trustee:

(1) semi-annually with respect to Securities of each series not later than 15 days after each Regular Record Date in respect of Securities of a series, a list, in each case in such form as the Trustee may reasonably require, of the names and addresses of Holders of such Securities as of the applicable date, and

(2) at such other times as the Trustee may request in writing, within 30 days after the receipt by the Company of any such request, a list of similar form and content as of a date not more than 15 days prior to the time such list is furnished,

provided, however, that so long as the Trustee is the Security Registrar no such list shall be required to be furnished.

## Section 7.2 Preservation of Information; Communications to Holders

The Trustee shall comply with the obligations imposed upon it pursuant to Section 312 of the Trust Indenture Act.

Every Holder of Securities, by receiving and holding the same, agrees with the Company and the Trustee that neither the Company, the Trustee, any Paying Agent or any Security Registrar shall be held accountable by reason of the disclosure of any such information as to the names and addresses of the Holders of Securities in accordance with Section 312 of the Trust Indenture Act, regardless of the source from which such information was derived, and that the Trustee shall not be held accountable by reason of mailing any material pursuant to a request made under Section 312(b) of the Trust Indenture Act.

## Section 7.3 Reports by Trustee

(1) Within 60 days after May 15 of each year commencing with the first May 15 following the first issuance of Securities pursuant to Section 3.1, if required by Section 313(a) of the Trust Indenture Act, the Trustee shall transmit, pursuant to Section 313(c) of the Trust Indenture Act, a brief report dated as of such May 15 with respect to any of the events specified in said Section 313(a) that may have occurred since the later of the immediately preceding May 15 and the date of this Indenture.

(2) The Trustee shall transmit any reports required by Sections 313(a) and (b) of the Trust Indenture Act at the times specified therein.

(3) A copy of each report, if any, described in Section 7.3(1) and (2) shall, at the time of such transmission to Holders, be filed by the Trustee with each stock exchange, if any, upon which the Securities are listed, with the Commission and with the Company. The Company will promptly notify the Trustee when the Securities are listed on any stock exchange and of any delisting thereof.

## Section 7.4 Reports by Company

The Company, pursuant to Section 314(a) of the Trust Indenture Act, shall:

(1) file with the Trustee, within 30 days after the Company has filed the same with the Commission, unless such reports are available on the Commission's EDGAR filing system (or any successor thereto), copies of the annual reports and of the information, documents and other reports (or copies of such portions of any of the foregoing as the Commission may from time to time by rules and regulations prescribe) which the Company may be required to file with the Commission pursuant to Section 13 or Section 15(d) of the Exchange Act; or, if the Company is not required to file information, documents or reports pursuant to either of Section 13 or Section 15(d) of the Exchange Act, then it shall file with the Trustee and the Commission, in accordance with rules and regulations prescribed from time to time by the Commission, such of the supplementary and periodic information, documents and reports which may be required pursuant to Section 13 of the Exchange Act in respect of a security listed and registered on a national securities exchange as may be prescribed from time to time in such rules and regulations;



(2) file with the Trustee and the Commission, in accordance with rules and regulations prescribed from time to time by the Commission, such additional information, documents and reports with respect to compliance by the Company with the conditions and covenants of this Indenture as may be required from time to time by such rules and regulations;

(3) transmit to the Holders within 30 days after the filing thereof with the Trustee, in the manner and to the extent provided in Section 313(c) of the Trust Indenture Act, such summaries of any information, documents and reports required to be filed by the Company pursuant to paragraphs (1) and (2) of this Section 7.4 as may be required by rules and regulations prescribed from time to time by the Commission; and

(4) furnish to the Trustee, within 120 days after the end of each fiscal year, a written statement (which need not be contained in or accompanied by an Officer's Certificate) signed by the principal executive officer, the principal financial officer or the principal accounting officer of the Company, stating that to the best of such officer's knowledge the Company has kept, observed, performed and fulfilled each and every covenant contained in this Indenture and is not in default in the performance or observance of any of the terms, provisions and conditions of this Indenture (or, if a default or Event of Default shall have occurred, describing all such defaults or Events of Default of which he or she may have knowledge and what action the Company is taking or proposes to take with respect thereto). For purposes of this paragraph (4), such compliance shall be determined without regard to any period of grace or requirement of notice provided in this Indenture.

Delivery of such reports, information and documents to the Trustee is for informational purposes only and the Trustee's receipt of such shall not constitute constructive notice of any information contained therein or determinable from information contained therein, including the Company's compliance with any of its covenants hereunder (as to which the Trustee is entitled to rely exclusively on Officer's Certificates). The Trustee shall have no duty to monitor the Company's compliance with the covenants contained in this Indenture other than to receive written notices as described in paragraph (4) of this Section 7.4.

## ARTICLE 8

### CONSOLIDATION, MERGER AND SALES

#### Section 8.1 Company May Consolidate, etc., Only on Certain Terms

The Company shall not directly or indirectly consolidate with or merge with or into, or sell, assign, transfer, lease, convey or otherwise dispose of all or substantially all of its assets and properties and the assets and properties of its Subsidiaries (taken as a whole) to another Person in one or more related transactions unless:

(1) either: (A) the Company is the survivor; or (B) the Person formed by or surviving any such consolidation or merger (if other than the Company) or to which such sale, assignment, transfer, lease, conveyance or other disposition has been made is a Person organized or existing under the laws of the United States, any state of the United States or the District of Columbia;

(2) the Person formed by or surviving any such consolidation or merger (if other than the Company) or the Person to which such sale, assignment, transfer, lease, conveyance or other disposition has been made shall expressly assume, by an indenture (or indentures, if at such time there is more than one Trustee) supplemental hereto, in form reasonably satisfactory to the Trustee, executed by the successor Person and delivered to the Trustee, the due and punctual payment of the principal of, any premium and interest on and any Additional Amounts with respect to, all the Securities and the performance of every obligation in this Indenture and the Outstanding Securities on the part of the Company to be performed or observed and shall provide for conversion or exchange rights in accordance with the provisions of the Securities of any series that are convertible or exchangeable into Common Stock or other securities, cash or other property;

(3) either the Company or the successor Person shall have delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that such consolidation, merger, sale, assignment, transfer, lease, conveyance or other disposition and, if a supplemental indenture is required in connection with such transaction, such supplemental indenture comply with this Article 8 and that all conditions precedent herein provided for relating to such transaction have been complied with; and

(4) immediately after giving effect to such transaction, no Event of Default or event which, after notice or lapse of time, or both, would become an Event of Default, shall have occurred and be continuing.

#### Section 8.2 Successor Person Substituted for Company

Upon any consolidation by the Company with or merger of the Company into any other Person or Persons where the Company is not the survivor or any sale, assignment, transfer, lease, conveyance or other disposition of all or substantially all of the properties and assets of the Company and the properties and assets of its Subsidiaries (taken as a whole) to any Person or Persons in accordance with Section 8.1, the successor Person formed by such consolidation or into which the Company is merged or to which such sale, assignment, transfer, lease, conveyance or other disposition is made shall succeed to, and be substituted for, and may exercise every right and power of, the Company under this Indenture with the same effect as if such successor Person had been named as the Company herein; and thereafter, except in the case of a lease, the predecessor Person shall be released from all obligations and covenants under this Indenture and the Securities.

### ARTICLE 9

#### SUPPLEMENTAL INDENTURES

##### Section 9.1 Supplemental Indentures without Consent of Holders

Without the consent of any Holders of Securities, the Company (when authorized by or pursuant to a Board Resolution) and the Trustee, at any time and from time to time, may enter into one or more indentures supplemental hereto, in form satisfactory to the Trustee, for any of the following purposes:

(1) to evidence the succession of another Person to the Company, and the assumption by any such successor of the covenants of the Company contained herein and in the Securities;

(2) to add to the covenants of the Company for the benefit of the Holders of all or any series of Securities (as shall be specified in such supplemental indenture or indentures) or to surrender any right or power herein conferred upon the Company; provided, that in respect of any such additional covenant, such supplemental indenture may provide for a particular period of grace after default (which period may be shorter or longer than that allowed in the case of other defaults) or may provide for an immediate enforcement upon such a default or may limit the remedies available to the Trustee upon an Event of Default or may limit the right of the Holders of a majority in aggregate principal amount of the Securities of such series to waive such an Event of Default;

(3) to establish the form or terms of Securities of any series as permitted by Section 2.1 and Section 3.1;

(4) to evidence and provide for the acceptance of appointment hereunder by a successor Trustee with respect to the Securities of one or more series and to add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one Trustee, pursuant to the requirements of Section 6.10;

(5) to cure any ambiguity, to correct or supplement any provision herein which may be defective or inconsistent with any other provision herein, or to make any other provisions with respect to matters or questions arising under this Indenture; provided that no action pursuant to this clause (5) shall adversely affect the interests of the Holders of Securities of any series then Outstanding in any material respect;

(6) to add to, delete from or revise the conditions, limitations and restrictions on the authorized amount, terms or purposes of issue, authentication and delivery of Securities, as herein set forth;

(7) to add any additional Events of Default with respect to all or any series of Securities (as shall be specified in such supplemental indenture);

(8) to supplement any of the provisions of this Indenture to such extent as shall be necessary for the defeasance and discharge of any series of Securities pursuant to Article 4, provided that any such action shall not adversely affect the interests of any Holder of an Outstanding Security of such series or any other Security in any material respect;

(9) to make provisions with respect to conversion or exchange rights of Holders of Securities of any series;

(10) to add guarantees in respect of the Securities of one or more series and to provide for the terms and conditions of release thereof;

(11) to convey, transfer, assign, mortgage or pledge to the Trustee as security for the Securities of one or more series any property or assets and to provide for the terms and conditions of release thereof;

(12) to change or eliminate any of the provisions of this Indenture, provided that any such change or elimination shall become effective only when there is no Outstanding Security of any series created prior to the execution of such supplemental indenture that is entitled to the benefit of such provision;

(13) to provide for Definitive Securities in addition to or in place of Global Securities;

(14) to qualify the Indenture under the Trust Indenture Act;

(15) with respect to the Securities of a series, to conform the text of the Indenture or the Securities of such series to any provision of the description thereof in the Company's offering memorandum or prospectus relating to the initial offering of such Securities, to the extent that such provision, in the good faith judgment of the Company, was intended to be a verbatim recitation of a provision of the Indenture or such Securities; or

(16) to make any other change that does not adversely affect the rights of Holders of Outstanding Securities in any material respect.

The Trustee is hereby required to join with the Company and any guarantors in the execution of any such supplemental indenture, to make any further appropriate agreements and stipulations which may be therein contained and to accept the conveyance, transfer, assignment, mortgage or pledge of any property thereunder, but the Trustee shall not be obligated to enter into any such supplemental indenture that affects the Trustee's own rights, duties or immunities under this Indenture or otherwise.

#### Section 9.2 Supplemental Indentures with Consent of Holders

With the consent of the Holders of not less than a majority (or such greater amount as is provided for a particular series of Securities) in principal amount of the Outstanding Securities of each series affected by such supplemental indenture (including consents obtained in connection with a purchase of, or tender offer or exchange offer for, Securities of such series), voting as a single class, by Act of said Holders delivered to the Company and the Trustee, the Company (when authorized by or pursuant to a Board Resolution) and the Trustee may enter into an indenture or indentures supplemental hereto for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of this Indenture or of modifying in any manner the rights of the Holders of Securities of such series under this Indenture or of the Securities of such series; provided, however, that no such supplemental indenture, without the consent of the Holder of each Outstanding Security affected thereby, shall:

(1) change the Stated Maturity of the principal of, or any premium or installment of interest on or any Additional Amounts with respect to, any Security, or reduce the principal amount thereof or the rate (or modify the calculation of such rate in a manner that reduces such rate) of interest thereon or any Additional Amounts with respect thereto, or any premium payable upon the redemption thereof or otherwise, or change the obligation of the Company to pay

Additional Amounts pursuant to Section 10.4, or reduce the amount of the principal of an Original Issue Discount Security that would be due and payable upon a declaration of acceleration of the Maturity thereof pursuant to Section 5.2 or the amount thereof provable in bankruptcy pursuant to Section 5.4, change the redemption provisions (other than provisions relating to notice periods (to the extent consistent with the Applicable Procedures of the Depositary) for redemption and conditions to redemption) or adversely affect the right of repayment at the option of any Holder as contemplated by Article 13, or change the Place of Payment for any Security or the Currency in which the principal of, any premium or interest on, or any Additional Amounts with respect to any Security is payable, or impair the right to institute suit for the enforcement of any such payment on or after the Stated Maturity thereof (or, in the case of redemption, on or after the Redemption Date or, in the case of repayment at the option of the Holder, on or after the date for repayment);

(2) reduce the percentage in principal amount of the Outstanding Securities of any series the consent of the Holders of which are required for any such supplemental indenture, or the consent of whose Holders is required for any waiver (of compliance with certain provisions of this Indenture or certain defaults hereunder and their consequences) provided for in this Indenture, or reduce the requirements of Section 15.4 for quorum or voting;

(3) modify any of the provisions of this Section 9.2 or Section 5.13 or Section 10.5, except to increase any such percentage or to provide that certain other provisions of this Indenture cannot be modified or waived without the consent of the Holder of each Outstanding Security affected thereby; or

(4) make any change that adversely affects the right to convert or exchange any Security into or for Common Stock or other securities, cash or other property in accordance with the terms of such Security.

A supplemental indenture that changes or eliminates any covenant or other provision of this Indenture that shall have been included expressly and solely for the benefit of one or more particular series of Securities, or that modifies the rights of the Holders of Securities of such series with respect to such covenant or other provision, shall be deemed not to affect the rights under this Indenture of the Holders of Securities of any other series.

It shall not be necessary for any Act of Holders of Securities under this Section 9.2 to approve the particular form of any proposed supplemental indenture, but it shall be sufficient if such Act shall approve the substance thereof.

Upon the request of the Company, accompanied by a copy of a Board Resolution authorizing the execution of any such supplemental indenture, and upon the filing with the Trustee of evidence of the consent of Holders of Securities as aforesaid, the Trustee shall join with the Company and any guarantors in the execution of such supplemental indenture unless such supplemental indenture affects the Trustee's own rights, duties or immunities under this Indenture or otherwise, in which case the Trustee may in its discretion, but shall not be obligated to, enter into such supplemental indenture.

### Section 9.3 Execution of Supplemental Indentures

As a condition to executing, or accepting the additional trusts created by, any supplemental indenture permitted by this Article 9 or the modifications thereby of the trusts created by this Indenture, the Trustee shall be entitled to receive, and shall be fully protected in relying upon, an Officer's Certificate and Opinion of Counsel stating that the execution of such supplemental indenture is authorized or permitted by this Indenture. The Trustee may, but shall not be obligated to, enter into any such supplemental indenture that affects the Trustee's own rights, duties or immunities under this Indenture or otherwise.

### Section 9.4 Revocation of Consents

Notwithstanding clause (5) of Section 1.4, any Holder of a Security or future Holder of the same Security may revoke a consent as to its Security or portion of a Security. Any revocation of a consent by the Holder of a Security or any such future Holder shall be effective only if the Trustee receives the notice of revocation before the date on which the Trustee receives an Officer's Certificate from the Company certifying that the requisite number of consents have been received. If, however, a record date is fixed pursuant to Section 1.4, then notwithstanding the second preceding sentence, those Persons who were Holders at such record date (or their duly designated proxies), and only those Persons, shall be entitled to revoke any consent previously given, whether or not such Persons continue to be Holders after such record date.

### Section 9.5 Effect of Supplemental Indentures

A supplemental indenture or waiver becomes effective upon the (a) receipt by the Company or the Trustee of the requisite number of consents (if required), (b) satisfaction of any conditions to effectiveness as set forth in this Indenture or any such supplemental indenture or waiver and (c) with respect to a supplemental indenture, execution of such supplemental indenture by the Company and the Trustee. After a supplemental indenture or waiver becomes effective, it shall bind every Holder, unless it makes a change described in any of clauses (1) through (4) of Section 9.2, in which case, the supplemental indenture or waiver shall bind a Holder of a Security who is affected thereby only if it has consented to such supplemental indenture or waiver and every subsequent Holder of a Security or portion of a Security that evidences the same debt as the consenting Holder's Security. Upon the effectiveness of any supplemental indenture under this Article, this Indenture shall be modified in accordance therewith, and such supplemental indenture shall form a part of this Indenture for all purposes; and, except as provided in the preceding sentence, every Holder of Securities theretofore or thereafter authenticated and delivered hereunder shall be bound thereby.

### Section 9.6 Reference in Securities to Supplemental Indentures

Securities of any series authenticated and delivered after the execution of any supplemental indenture pursuant to this Article 9 may, and shall if required by the Trustee, bear a notation in form approved by the Trustee as to any matter provided for in such supplemental indenture. If the Company shall so determine, new Securities of any series so modified as to conform, in the opinion of the Trustee and the Company, to any such supplemental indenture may be prepared and executed by the Company and authenticated and delivered by the Trustee in exchange for Outstanding Securities of such series.

Section 9.7 Conformity with Trust Indenture Act

Every supplemental indenture executed pursuant to this Article 9 shall conform to the requirements of the Trust Indenture Act as then in effect.

Section 9.8 Notice of Supplemental Indenture

Promptly after the execution by the Company and the Trustee of any supplemental indenture pursuant to Section 9.2, the Company shall transmit to the Holders of Outstanding Securities of any series affected thereby a notice setting forth the substance of such supplemental indenture; provided, that any failure to provide, or any defect in any such notice, shall not impair the validity of any such supplemental indenture.

**ARTICLE 10**

**COVENANTS**

Section 10.1 Payment of Principal, Any Premium, Interest and Additional Amounts

The Company covenants and agrees for the benefit of the Holders of the Securities of each series that it will duly and punctually pay the principal of, any premium and interest on and any Additional Amounts with respect to, the Securities of such series in accordance with the terms thereof and this Indenture.

Section 10.2 Maintenance of Office or Agency

The Company shall maintain in each Place of Payment for any series of Securities an Office or Agency where Securities of such series may be presented or surrendered for payment, where Securities of such series may be surrendered for registration of transfer or exchange, where Securities of such series that are convertible or exchangeable may be surrendered for conversion or exchange, and where notices and demands to or upon the Company in respect of the Securities of such series relating thereto and this Indenture may be served. The Company will give prompt written notice to the Trustee of the location, and any change in the location, of such Office or Agency. If at any time the Company shall fail to maintain any such required Office or Agency or shall fail to furnish the Trustee with the address thereof, such presentations, surrenders, notices and demands may be made or served at the Corporate Trust Office of the Trustee, and the Company hereby appoints the Trustee as its agent to receive all such presentations, surrenders, notices and demands.

The Company may also from time to time designate one or more other Offices or Agencies where the Securities of one or more series may be presented or surrendered for any or all such purposes and may from time to time rescind such designations; provided, however, that no such designation or rescission shall in any manner relieve the Company of its obligation to maintain an Office or Agency in each Place of Payment for Securities of any series for such purposes. The Company shall give prompt written notice to the Trustee of any such designation or rescission and of any change in the location of any such other Office or Agency.

Unless otherwise provided in or pursuant to this Indenture, the Company hereby designates as the Place of Payment for each series of Securities the Borough of Manhattan, The City of New York, and initially appoints the Corporate Trust Office of \_\_\_\_\_, located at \_\_\_\_\_, as the Office or Agency of the Company in the Borough of Manhattan, The City of New York, for such purpose. The Company may subsequently appoint a different Office or Agency in the Borough of Manhattan, The City of New York, for the Securities of any series.

### Section 10.3 Money for Securities Payments to Be Held in Trust

If the Company shall at any time act as its own Paying Agent with respect to any series of Securities, it shall, on or before each due date of the principal of, any premium or interest on or Additional Amounts with respect to any of the Securities of such series, segregate and hold in trust for the benefit of the Persons entitled thereto a sum in the currency or currencies, currency unit or units or composite currency or currencies in which the Securities of such series are payable (except as otherwise specified pursuant to Section 3.1 for the Securities of such series) sufficient to pay the principal or any premium, interest or Additional Amounts so becoming due until such sums shall be paid to such Persons or otherwise disposed of as herein provided, and shall promptly notify the Trustee of its failure so to act.

Whenever the Company shall have one or more Paying Agents for any series of Securities, it shall, on or prior to each due date of the principal of, any premium or interest on or any Additional Amounts with respect to any Securities of such series, deposit with any Paying Agent a sum (in the currency or currencies, currency unit or units or composite currency or currencies described in the preceding paragraph) sufficient to pay the principal or any premium, interest or Additional Amounts so becoming due, such sum to be held in trust for the benefit of the Persons entitled thereto, and (unless such Paying Agent is the Trustee) the Company will promptly notify the Trustee of its failure so to act.

The Company shall cause each Paying Agent for any series of Securities (other than the Trustee) to execute and deliver to the Trustee an instrument in which such Paying Agent shall agree with the Trustee, subject to the provisions of this Section 10.3, that such Paying Agent shall:

- (1) hold all sums held by it for the payment of the principal of, any premium or interest on or any Additional Amounts with respect to Securities of such series in trust for the benefit of the Persons entitled thereto until such sums shall be paid to such Persons or otherwise disposed of as provided in or pursuant to this Indenture;
- (2) give the Trustee notice of any default by the Company (or any other obligor upon the Securities of such series) in the making of any payment of principal, any premium or interest on or any Additional Amounts with respect to the Securities of such series; and
- (3) at any time during the continuance of any such default, upon the written request of the Trustee, forthwith pay to the Trustee all sums so held in trust by such Paying Agent.



The Company may at any time, for the purpose of obtaining the satisfaction and discharge of this Indenture or for any other purpose, pay, or by Company Order direct any Paying Agent to pay, to the Trustee all sums held in trust by the Company or such Paying Agent, such sums to be held by the Trustee upon the same terms as those upon which such sums were held by the Company or such Paying Agent; and, upon such payment by any Paying Agent to the Trustee, such Paying Agent shall be released from all further liability with respect to such sums.

Except as otherwise provided herein or pursuant hereto, any money deposited with the Trustee or any Paying Agent, or then held by the Company, in trust for the payment of the principal of, any premium or interest on or any Additional Amounts with respect to any Security of any series and remaining unclaimed for two years after such principal or any such premium or interest or any such Additional Amounts shall have become due and payable shall, subject to applicable escheat law, be paid to the Company on Company Request, or (if then held by the Company) shall be discharged from such trust; and the Holder of such Security shall thereafter, as an unsecured general creditor, look only to the Company for payment thereof, and all liability of the Trustee or such Paying Agent with respect to such trust money, and all liability of the Company as trustee thereof, shall thereupon cease; provided, however, that the Trustee or such Paying Agent, before being required to make any such repayment, may at the expense of the Company either cause to be published once, in an Authorized Newspaper in each Place of Payment for such series, or may cause to be mailed once to Holders of Registered Securities of such series, notice that such money remains unclaimed and that, after a date specified therein, which shall not be less than 30 days from the date of such publication or mailing nor later than two years after such principal and any premium or interest or Additional Amounts shall have become due and payable, any unclaimed balance of such money then remaining will be repaid to the Company.

#### Section 10.4 Additional Amounts

If any Securities of a series provide for the payment of Additional Amounts, the Company agrees to pay to the Holder of any such Security Additional Amounts as provided in or pursuant to this Indenture or such Securities. Whenever in this Indenture there is mentioned, in any context, the payment of the principal of or any premium or interest on, or in respect of, any Security of any series, such mention shall be deemed to include mention of the payment of Additional Amounts provided by the terms of such series established hereby or pursuant hereto to the extent that, in such context, Additional Amounts are, were or would be payable in respect thereof pursuant to such terms, and express mention of the payment of Additional Amounts (if applicable) in any provision hereof shall not be construed as excluding Additional Amounts in those provisions hereof where such express mention is not made.

Except as otherwise provided in or pursuant to this Indenture or the Securities of the applicable series, if the Securities of a series provide for the payment of Additional Amounts, at least 10 days prior to the first Interest Payment Date with respect to such series of Securities (or if the Securities of such series shall not bear interest prior to Maturity, the first day on which a payment of principal is made), and at least 10 days prior to each date of payment of principal or interest if there has been any change with respect to the matters set forth in the below-mentioned Officer's Certificate, the Company shall furnish to the Trustee and the principal Paying Agent or Paying Agents, if other than the Trustee, an Officer's Certificate instructing the Trustee and such

Paying Agent or Paying Agents whether such payment of principal of and premium, if any, or interest on the Securities of such series shall be made to Holders of Securities of such series who are United States Aliens (as demonstrated by delivery of appropriate tax forms) without withholding for or on account of any tax, assessment or other governmental charge described in the Securities of such series. If any such withholding shall be required, then such Officer's Certificate shall specify by country the amount, if any, required to be withheld on such payments to such Holders of Securities, and the Company agrees to pay to the Trustee or such Paying Agent the Additional Amounts required by the terms of such Securities. The Company covenants to indemnify the Trustee and any Paying Agent for, and to hold them harmless against, any loss, liability or expense reasonably incurred without negligence or bad faith on their part arising out of or in connection with actions taken or omitted by any of them in reliance on any Officer's Certificate furnished pursuant to this Section 10.4.

#### Section 10.5 Waiver of Certain Covenants

The Company may omit in any particular instance to comply with any term, provision or condition specified pursuant to Section 3.1 with respect to the Securities of any series if the Company shall have obtained or filed with the Trustee, prior to the time of such failure or omission, evidence (as described in Section 1.4) of the consent of the Holders of a majority in aggregate principal amount of the Outstanding Securities of such series, by Act of such Holders, either waiving such compliance in such instance or generally waiving compliance with such term, provision or condition, but no such waiver shall extend to or affect such term, provision or condition except to the extent so expressly waived, and, until such waiver shall become effective in accordance with Section 9.5, the obligations of the Company and the duties of the Trustee in respect of any such term, provision or condition shall remain in full force and effect.

### **ARTICLE 11**

#### **REDEMPTION OF SECURITIES**

##### Section 11.1 Applicability of Article

Redemption of Securities of any series at the option of the Company as permitted or required by the terms of such Securities shall be made in accordance with the terms of such Securities and (except as otherwise provided herein or pursuant hereto) this Article 11.

##### Section 11.2 Election to Redeem; Notice to Trustee

The election of the Company to optionally redeem any Securities shall be evidenced by or pursuant to a Board Resolution. In case of any redemption at the election of the Company of the Securities of any series, the Company shall, at least 60 days prior to the Redemption Date fixed by the Company (unless a shorter notice shall be satisfactory to the Trustee), notify the Trustee of such Redemption Date and of the principal amount of Securities of such series to be redeemed. In the case of any redemption of Securities (a) prior to the expiration of any restriction on such redemption provided in the terms of such Securities or elsewhere in this Indenture, or (b) pursuant to an election of the Company that is subject to a condition specified in the terms of such Securities or elsewhere in this Indenture, the Company shall furnish the Trustee with an Officer's Certificate evidencing compliance with such restriction or condition.

### Section 11.3 Selection by Trustee of Securities to Be Redeemed

Unless otherwise indicated for a particular Series by a Board Resolution, an Officer's Certificate or a supplemental indenture hereto, if less than all of the Securities of any series with the same issue date, interest rate or formula, Stated Maturity and other terms are to be redeemed, the particular Securities to be redeemed shall be selected not more than 60 days prior to the Redemption Date by the Trustee from the Outstanding Securities of such series not previously called for redemption on a pro rata basis or by lot (whichever is consistent with the Trustee's customary practice); provided, however, that no such partial redemption shall reduce the portion of the principal amount of a Registered Security of such series not redeemed to less than the minimum denomination for a Security of such series established herein or pursuant hereto.

The Trustee shall promptly notify the Company and the Security Registrar (if other than itself) in writing of the Securities selected for redemption and, in the case of any Securities selected for partial redemption, the principal amount thereof to be redeemed.

For all purposes of this Indenture, unless the context otherwise requires, all provisions relating to the redemption of Securities shall relate, in the case of any Securities redeemed or to be redeemed only in part, to the portion of the principal of such Securities that has been or is to be redeemed.

Unless otherwise specified in or pursuant to this Indenture or the Securities of any series, if any Security selected for partial redemption is converted into or exchanged for Common Stock or other securities, cash or other property in part before termination of the conversion or exchange right with respect to the portion of the Security so selected, the converted portion of such Security shall be deemed (so far as may be) to be the portion selected for redemption. Securities that have been converted or exchanged during a selection of Securities to be redeemed shall be treated by the Trustee as Outstanding for the purpose of such selection.

### Section 11.4 Notice of Redemption

Notice of redemption shall be given in the manner provided in Section 1.6, not less than 30 nor more than 60 days prior to the Redemption Date, unless a shorter period is specified in the Securities to be redeemed, to the Holders of Securities to be redeemed. Failure to give notice by mailing in the manner herein provided to the Holder of any Registered Securities designated for redemption as a whole or in part, or any defect in the notice to any such Holder, shall not affect the validity of the proceedings for the redemption of any other Securities or portion thereof.

Any notice that is mailed to the Holder of any Registered Securities in the manner herein provided shall be conclusively presumed to have been duly given, whether or not such Holder receives the notice.

All notices of redemption shall state:

(1) the Redemption Date;

(2) the Redemption Price or if not then ascertainable, the manner of calculation thereof;

(3) if less than all Outstanding Securities of any series are to be redeemed, the identification (and, in the case of partial redemption, the principal amount) of the particular Security or Securities to be redeemed;

(4) in case any Security is to be redeemed in part only, the notice which relates to such Security shall state that on and after the Redemption Date, upon surrender of such Security, the Holder of such Security will receive, without charge, a new Security or Securities of authorized denominations for the principal amount thereof remaining unredeemed;

(5) that, on the Redemption Date, the Redemption Price shall become due and payable upon each such Security or portion thereof to be redeemed, and, if applicable, that interest thereon shall cease to accrue on and after said date, subject to such conditions as may be specified pursuant to Section 3.1 with respect to such Security;

(6) the place or places where such Securities are to be surrendered for payment of the Redemption Price and any accrued interest and Additional Amounts pertaining thereto;

(7) that the redemption is for a sinking fund, if such is the case;

(8) in the case of Securities of any series that are convertible or exchangeable into Common Stock or other securities, cash or other property, the conversion or exchange price or rate, the date or dates on which the right to convert or exchange the principal of the Securities of such series to be redeemed will commence or terminate and the place or places where such Securities may be surrendered for conversion or exchange; and

(9) the CUSIP number (or any other numbers used by a Depositary to identify such Securities).

A notice of redemption published as contemplated by Section 1.6 need not identify particular Registered Securities to be redeemed.

Notice of redemption of Securities to be redeemed at the election of the Company shall be given by the Company or, upon Company Request, by the Trustee in the name and at the expense of the Company.

#### Section 11.5 Deposit of Redemption Price

At or prior to 10:00 a.m., New York City time, on any Redemption Date, the Company shall deposit, with respect to the Securities of any series called for redemption pursuant to Section 11.4, with the Trustee or with a Paying Agent (or, if the Company is acting as its own Paying Agent, segregate and hold in trust as provided in Section 10.3) an amount of money in the applicable Currency sufficient to pay the Redemption Price of, and (except if the Redemption Date shall be an Interest Payment Date, unless otherwise specified pursuant to Section 3.1 or in the Securities of such series) any accrued interest on and Additional Amounts with respect to such accrued interest, all such Securities or portions thereof which are to be redeemed on that date.

#### Section 11.6 Securities Payable on Redemption Date

Notice of redemption having been given as aforesaid and all conditions specified pursuant to Section 3.1 having been satisfied, the Securities so to be redeemed shall, on the Redemption Date, become due and payable at the Redemption Price therein specified, and from and after such date (unless the Company shall default in the payment of the Redemption Price and accrued interest) such Securities shall cease to bear interest. Upon surrender of any such Security for redemption in accordance with said notice, such Security shall be paid by the Company at the Redemption Price, together with any accrued interest and Additional Amounts to the Redemption Date; provided, however, that, except as otherwise specified in or pursuant to this Indenture or the Registered Securities of such series, installments of interest on Registered Securities whose Stated Maturity is on or prior to the Redemption Date shall be payable to the Holders of such Securities, or one or more Predecessor Securities, registered as such at the close of business on the Regular Record Dates therefor according to their terms and the provisions of Section 3.7.

Unless otherwise specified in or pursuant to this Indenture or the Securities of any series, if any Security called for redemption shall not be so paid upon surrender thereof for redemption, the principal and any premium, until paid, shall bear interest from the Redemption Date at the rate prescribed therefor in the Security.

#### Section 11.7 Securities Redeemed in Part

Any Registered Security which is to be redeemed only in part shall be surrendered at any Office or Agency for such Security (with, if the Company or the Trustee so requires, due endorsement by, or a written instrument of transfer in form satisfactory to the Company and the Trustee duly executed by, the Holder thereof or his attorney duly authorized in writing) and the Company shall execute and the Trustee shall authenticate and deliver to the Holder of such Security without service charge, a new Registered Security or Securities of the same series, containing identical terms and provisions, of any authorized denomination as requested by such Holder in aggregate principal amount equal to and in exchange for the unredeemed portion of the principal amount of the Security so surrendered. If a Global Security is so surrendered, the Company shall execute, and the Trustee shall authenticate and deliver to or on behalf of the U.S. Depository or other Depository for such Global Security as shall be specified in the Company Order with respect thereto to the Trustee, without service charge, a new Global Security in a denomination equal to and in exchange for the unredeemed portion of the principal of the Global Security so surrendered.

#### Section 11.8 Repurchases on the Open Market

The Company or any Affiliate of the Company may at any time or from time to time repurchase any of the Securities in the open market or otherwise. Such Securities may, at the option of the Company or the relevant Affiliate of the Company, be held, resold or surrendered to the Trustee for cancellation.

## ARTICLE 12

### SINKING FUNDS

#### Section 12.1 Applicability of Article

The provisions of this Article 12 shall be applicable to any sinking fund for the retirement of Securities of a series, except as otherwise permitted or required in or pursuant to this Indenture or any Security of such series issued pursuant to this Indenture.

The minimum amount of any sinking fund payment provided for by the terms of Securities of any series is herein referred to as a “mandatory sinking fund payment,” and any payment in excess of such minimum amount provided for by the terms of Securities of such series is herein referred to as an “optional sinking fund payment.” If provided for by the terms of Securities of any series, the cash amount of any sinking fund payment may be subject to reduction as provided in Section 12.2. Each sinking fund payment shall be applied to the redemption of Securities of any series as provided for by the terms of Securities of such series and this Indenture.

#### Section 12.2 Satisfaction of Sinking Fund Payments with Securities

The Company may, in satisfaction of all or any part of any sinking fund payment with respect to the Securities of any series to be made pursuant to the terms of such Securities (1) deliver Outstanding Securities of such series (other than any of such Securities previously called for redemption or any of such Securities in respect of which cash shall have been released to the Company) and (2) apply as a credit Securities of such series which have been redeemed either at the election of the Company pursuant to the terms of such series of Securities or through the application of permitted optional sinking fund payments pursuant to the terms of such Securities, provided that such Securities have not been previously so credited. Such Securities shall be received and credited for such purpose by the Trustee at the Redemption Price specified in such Securities for redemption through operation of the sinking fund and the amount of such sinking fund payment shall be reduced accordingly. If as a result of the delivery or credit of Securities of any series in lieu of cash payments pursuant to this Section 12.2, the principal amount of Securities of such series to be redeemed in order to satisfy the remaining sinking fund payment shall be less than \$100,000, the Trustee need not call Securities of such series for redemption, except upon Company Request, and such cash payment shall be held by the Trustee or a Paying Agent and applied to the next succeeding sinking fund payment, provided, however, that the Trustee or such Paying Agent shall at the request of the Company from time to time pay over and deliver to the Company any cash payment so being held by the Trustee or such Paying Agent upon delivery by the Company to the Trustee of Securities of that series purchased by the Company having an unpaid principal amount equal to the cash payment requested to be released to the Company.

### Section 12.3 Redemption of Securities for Sinking Fund

Not less than 60 days (unless otherwise indicated in the Board Resolution, Officer's Certificate or supplemental indenture in respect of a particular series of Securities) prior to each sinking fund payment date for any series of Securities, the Company shall deliver to the Trustee an Officer's Certificate specifying the amount of the next ensuing mandatory sinking fund payment for that series pursuant to the terms of that series, the portion thereof, if any, which is to be satisfied by payment of cash and the portion thereof, if any, which is to be satisfied by delivering and crediting of Securities of that series pursuant to Section 12.2, and the basis for such credit and the optional amount, if any, to be added in cash to the next ensuing mandatory sinking fund payment, and will also deliver to the Trustee any Securities to be so credited and not theretofore delivered. If such Officer's Certificate shall specify an optional amount to be added in cash to the next ensuing mandatory sinking fund payment, the Company shall thereupon be obligated to pay the amount therein specified. Not less than 30 days (unless otherwise indicated in the Board Resolution, Officer's Certificate or supplemental indenture in respect of a particular series of Securities) before each such sinking fund payment date the Trustee shall select the Securities to be redeemed upon such sinking fund payment date in the manner specified in Section 11.3 and cause notice of the redemption thereof to be given in the name of and at the expense of the Company in the manner provided in Section 11.4. Such notice having been duly given, the redemption of such Securities shall be made upon the terms and in the manner stated in Section 11.6 and Section 11.7.

## ARTICLE 13

### REPAYMENT AT THE OPTION OF HOLDERS

#### Section 13.1 Applicability of Article

Securities of any series which are repayable at the option of the Holders thereof before their Stated Maturity shall be repaid in accordance with the terms of the Securities of such series. The repayment of any principal amount of Securities pursuant to such option of the Holder to require repayment of Securities before their Stated Maturity, for purposes of Section 3.9, shall not operate as a payment, redemption or satisfaction of the indebtedness represented by such Securities unless and until the Company, at its option, shall deliver or surrender the same to the Trustee with a directive that such Securities be cancelled. Notwithstanding anything to the contrary contained in this Section 13.1, in connection with any repayment of Securities, the Company may arrange for the purchase of any Securities by an agreement with one or more investment bankers or other purchasers to purchase such Securities by paying to the Holders of such Securities on or before the close of business on the repayment date an amount not less than the repayment price payable by the Company on repayment of such Securities, and the obligation of the Company to pay the repayment price of such Securities shall be satisfied and discharged to the extent such payment is so paid by such purchasers.

## ARTICLE 14

### SECURITIES IN FOREIGN CURRENCIES

#### Section 14.1 Applicability of Article

Whenever this Indenture provides for (i) any action by, or the determination of any of the rights of, Holders of Securities of any series in which not all of such Securities are denominated in the same Currency, or (ii) any distribution to Holders of Securities, in the absence of any provision to the contrary pursuant to this Indenture or the Securities of any particular series, any amount in respect of any Security denominated in a Foreign Currency shall be treated for any such action or distribution as that amount of Dollars that could be obtained for such amount on such reasonable basis of exchange and as of the record date with respect to Registered Securities of such series (if any) for such action, determination of rights or distribution (or, if there shall be no applicable record date, such other date reasonably proximate to the date of such action, determination of rights or distribution) as the Company may specify in a written notice to the Trustee or, in the absence of such written notice, as the Trustee may determine.

## ARTICLE 15

### MEETINGS OF HOLDERS OF SECURITIES

#### Section 15.1 Purposes for Which Meetings May Be Called

A meeting of Holders of Securities of any series may be called at any time and from time to time pursuant to this Article 15 to make, give or take any request, demand, authorization, direction, notice, consent, waiver or other Act provided by this Indenture to be made, given or taken by Holders of Securities of such series.

#### Section 15.2 Call, Notice and Place of Meetings

(1) The Trustee may at any time call a meeting of Holders of Securities of any series for any purpose specified in Section 15.1, to be held at such time and at such place in the Borough of Manhattan, The City of New York as the Trustee may select and as shall be acceptable to the Company. Notice of every meeting of Holders of Securities of any series, setting forth the time and the place of such meeting and in general terms the action proposed to be taken at such meeting, shall be given, in the manner provided in Section 1.6, not less than 21 nor more than 180 days prior to the date fixed for the meeting.

(2) In case at any time the Company (by or pursuant to a Board Resolution) or the Holders of at least 25% in principal amount of the Outstanding Securities of any series shall have requested the Trustee to call a meeting of the Holders of Securities of such series for any purpose specified in Section 15.1, by written request setting forth in reasonable detail the action proposed to be taken at the meeting, and the Trustee shall not have mailed notice of such meeting within 21 days after receipt of such request or shall not thereafter proceed to cause the meeting to be held as provided herein, then the Company or the Holders of Securities of such series in the amount above specified, as the case may be, may determine the time and the place in the Borough of Manhattan, The City of New York for such meeting and may call such meeting for such purposes by giving notice thereof as provided in clause (1) of this Section 15.4.

#### Section 15.3 Persons Entitled to Vote at Meetings

To be entitled to vote at any meeting of Holders of Securities of any series, a Person shall be (1) a Holder of one or more Outstanding Securities of such series, or (2) a Person appointed by an instrument in writing as proxy for a Holder or Holders of one or more Outstanding Securities of such series by such Holder or Holders. The only Persons who shall be entitled to be present or to speak at any meeting of Holders of Securities of any series shall be the Persons entitled to vote at such meeting and their counsel, any representatives of the Trustee and its counsel and any representatives of the Company and its counsel.



#### Section 15.4 Quorum; Action

The Persons entitled to vote a majority in principal amount of the Outstanding Securities of a series shall constitute a quorum for a meeting of Holders of Securities of such series; provided, however, that if any action is to be taken at such meeting with respect to a consent or waiver which this Indenture expressly provides may be given by the Holders of a different percentage in principal amount of the Outstanding Securities of a series, the Persons entitled to vote such percentage in principal amount of the Outstanding Securities of such series shall constitute a quorum. In the absence of a quorum within 30 minutes after the time appointed for any such meeting, the meeting shall, if convened at the request of Holders of Securities of such series, be dissolved. In any other case the meeting may be adjourned for a period of not less than 10 days as determined by the chairman of the meeting prior to the adjournment of such meeting. In the absence of a quorum at any such adjourned meeting, such adjourned meeting may be further adjourned for a period of not less than 10 days as determined by the chairman of the meeting prior to the adjournment of such adjourned meeting. Notice of the reconvening of any adjourned meeting shall be given as provided in Section 15.2(1), except that such notice need be given only once not less than five days prior to the date on which the meeting is scheduled to be reconvened. Notice of the reconvening of an adjourned meeting shall state expressly the percentage, as provided above, of the principal amount of the Outstanding Securities of such series which shall constitute a quorum.

Except as limited by the proviso to Section 9.2, any resolution presented to a meeting or adjourned meeting duly reconvened at which a quorum is present as aforesaid may be adopted only by the affirmative vote of the Holders of a majority in principal amount of the Outstanding Securities of that series; provided, however, that, except as limited by the proviso to Section 9.2, any resolution with respect to any consent or waiver which this Indenture or any supplemental indenture expressly provides may be given by the Holders of at least 66-2/3% in principal amount of the Outstanding Securities of a series may be adopted at a meeting or an adjourned meeting duly convened and at which a quorum is present as aforesaid only by the affirmative vote of the Holders of 66-2/3% in principal amount of the Outstanding Securities of that series; and provided, further, that, except as limited by the proviso to Section 9.2, any resolution with respect to any request, demand, authorization, direction, notice, consent, waiver or other Act which this Indenture or any supplemental indenture expressly provides may be made, given or taken by the Holders of a different specified percentage, which is less than a majority, in principal amount of the Outstanding Securities of a series, may be adopted at a meeting or an adjourned meeting duly reconvened and at which a quorum is present as aforesaid by the affirmative vote of the Holders of such specified percentage in principal amount of the Outstanding Securities of such series.

Any resolution passed or decision taken at any meeting of Holders of Securities of any series duly held in accordance with this Section 15.4 shall be binding on all the Holders of Securities of such series, whether or not such Holders were present or represented at the meeting.

### Section 15.5 Determination of Voting Rights; Conduct and Adjournment of Meetings

(1) Notwithstanding any other provisions of this Indenture, the Trustee may make such reasonable regulations as it may deem advisable for any meeting of Holders of Securities of such series in regard to proof of the holding of Securities of such series and of the appointment of proxies and in regard to the appointment and duties of inspectors of votes, the submission and examination of proxies, certificates and other evidence of the right to vote, and such other matters concerning the conduct of the meeting as it shall deem appropriate. Except as otherwise permitted or required by any such regulations, the holding of Securities shall be proved in the manner specified in Section 1.4 and the appointment of any proxy shall be proved in the manner specified in Section 1.4. Such regulations may provide that written instruments appointing proxies, regular on their face, may be presumed valid and genuine without the proof specified in Section 1.4 or other proof.

(2) The Trustee shall, by an instrument in writing, appoint a temporary chairman of the meeting, unless the meeting shall have been called by the Company or by Holders of Securities as provided in Section 15.2(2), in which case the Company or the Holders of Securities of the series calling the meeting, as the case may be, shall in like manner appoint a temporary chairman. A permanent chairman and a permanent secretary of the meeting shall be elected by vote of the Persons entitled to vote a majority in principal amount of the Outstanding Securities of such series represented at the meeting.

(3) At any meeting, each Holder of a Security of such series or proxy shall be entitled to one vote for each \$1,000 principal amount of Securities of such series held or represented by him; provided, however, that no vote shall be cast or counted at any meeting in respect of any Security challenged as not Outstanding and ruled by the chairman of the meeting to be not Outstanding. The chairman of the meeting shall have no right to vote, except as a Holder of a Security of such series or proxy.

(4) Any meeting of Holders of Securities of any series duly called pursuant to Section 15.2 at which a quorum is present may be adjourned from time to time by Persons entitled to vote a majority in principal amount of the Outstanding Securities of such series represented at the meeting; and the meeting may be held as so adjourned without further notice.

### Section 15.6 Counting Votes and Recording Action of Meetings

The vote upon any resolution submitted to any meeting of Holders of Securities of any series shall be by written ballots on which shall be subscribed the signatures of the Holders of Securities of such series or of their representatives by proxy and the principal amounts and serial numbers of the Outstanding Securities of such series held or represented by them. The permanent chairman of the meeting shall appoint two inspectors of votes who shall count all votes cast at the meeting for or against any resolution and who shall make and file with the permanent secretary of the meeting their verified written reports in triplicate of all votes cast at the meeting. A record, at least in triplicate, of the proceedings of each meeting of Holders of Securities of any series shall be prepared by the permanent secretary of the meeting and there shall be attached to said record the original reports of the inspectors of votes on any vote by ballot taken thereat and affidavits by one or more Persons having knowledge of the facts setting forth a copy of the

notice of the meeting and showing that said notice was given as provided in Section 15.2 and, if applicable, Section 15.4. Each copy shall be signed and verified by the affidavits of the permanent chairman and secretary of the meeting and one such copy shall be delivered to the Company, and another to the Trustee to be preserved by the Trustee, the latter to have attached thereto the ballots voted at the meeting. Any record so signed and verified shall be conclusive evidence of the matters therein stated.

*[Remainder of Page Intentionally Left Blank]*

IN WITNESS WHEREOF, the parties hereto have caused this Indenture to be duly executed as of the day and year first above written.

**HCW BIOLOGICS INC.**

By: \_\_\_\_\_  
Name:  
Title:

\_\_\_\_\_,  
as Trustee

By: \_\_\_\_\_  
Name:  
Title:



August 19, 2022

**Orrick, Herrington & Sutcliffe LLP**  
The Orrick Building  
405 Howard Street  
San Francisco, CA 94105-2669  
+1 415 773 5700  
**orrick.com**

HCW Biologics Inc.  
N. Commerce Parkway  
Miramar, FL 33025

Re: HCW Biologics Inc.  
Registration Statement on Form S-3

Ladies and Gentlemen:

At your request, we have examined the Registration Statement on Form S-3 (the "Registration Statement"), filed with the Securities and Exchange Commission (the "Commission") relating to the offering and sale from time to time, pursuant to Rule 415 of the General Rules and Regulations of the Commission promulgated under the Securities Act of 1933, as amended (the "Securities Act"), by HCW Biologics Inc., a Delaware corporation (the "Company"), of up to \$100,000,000 aggregate offering amount of:

- (i) debt securities of the Company, in one or more series (the "Debt Securities");
- (ii) common stock of the Company, \$0.0001 par value per share (the "Common Stock"), including Common Stock that may be issued upon conversion of the Preferred Stock (as defined below) upon the exercise of Warrants (as defined below), or upon the conversion of the Debt Securities;
- (iii) preferred stock of the Company, \$0.0001 par value per share (the "Preferred Stock"), including Preferred Stock that may be issued upon conversion of the Debt Securities;
- (iv) warrants to purchase Common Stock, Preferred Stock, or Debt Securities, which may be issued independently or together with other securities of the Company (the "Warrants");
- (v) subscription rights to purchase Common Stock, Preferred Stock, or Debt Securities, which may be issued independently or together with other securities of the Company (the "Subscription Rights"); and
- (vi) units of the Company consisting of Common Stock, Preferred Stock, Debt Securities, or Warrants, in any combination (the "Units").

The offering of Debt Securities, Common Stock, Preferred Stock, Warrants, Subscription Rights and Units (collectively, the "Securities") will be as set forth in the prospectus contained in the Registration Statement (the "Prospectus"), as supplemented by one or more supplements to the Prospectus (each, a "Prospectus Supplement"). The Debt Securities will be issued pursuant to an indenture between the Company and a trustee to be appointed in the future (a "Trustee") in the form filed as Exhibit 4.2 to the Registration Statement, and one or more resolutions of the Board of Directors of the Company (the "Board"), supplements thereto or officer's certificates thereunder (such indenture, together with the applicable resolutions of the Board, supplement or officer's certificate pertaining to the applicable series of Debt Securities, the "Base Indenture").

HCW Biologics Inc.  
August 19, 2022  
Page 2

We advise you that we have also examined (i) the sales agreement prospectus filed, together with the Registration Statement and Prospectus, with the Commission on August 19, 2022 (the "Sales Agreement Prospectus") relating to the sale by the Company through JonesTrading Institutional Services LLC, as the sales agent (the "Sales Agent"), from time to time of shares of Common Stock (the "Placement Shares") having an aggregate maximum offering price of up to \$15,500,000 pursuant to the Registration Statement and the Sales Agreement Prospectus for the sale of the Placement Shares included in the Registration Statement, and (ii) that certain Capital on Demand<sup>TM</sup> Sales Agreement, dated as of August 19, 2022, by and between the Company and the Sales Agent (the "Sales Agreement").

We have examined and relied upon (a) the Registration Statement and the Prospectus, (b) the Company's certificate of incorporation (the "Certificate of Incorporation") and bylaws, each as amended and restated through the date hereof, (c) certain resolutions of the Board relating to the Registration Statement or the issuance, sale and registration of the Placement Shares and (d) the originals or copies, certified or otherwise, identified to our satisfaction, of such records of the Company, certificates of public officials, officers of the Company and other persons, and such other documents, agreements and instruments as we have deemed relevant and necessary for the basis of our opinions hereinafter expressed.

In such examination, we have assumed the following: (i) the authenticity of documents submitted to us as originals and the genuineness of all signatures; (ii) the legal capacity and competency of all signatories, (iii) the conformity to the originals of all documents submitted to us as copies and the authenticity of the originals of such copies; (iv) all documents filed as exhibits to the Registration Statement that have not been executed will conform to the forms thereof; and (v) the truth, accuracy and completeness of the information, factual matters, representations and warranties contained in the records, agreements, documents, instruments and certificates we have reviewed. In making our examination of documents executed or to be executed, we have assumed that the parties thereto, other than the Company, had or will have the power, corporate or other, to enter into and perform all obligations thereunder and have also assumed the due authorization by all requisite action, corporate or other, and the execution and delivery by such parties of such documents and the validity and binding effect thereof on such parties. As to any facts material to the opinions expressed herein that we did not independently establish or verify, we have relied upon statements and representations of officers and other representatives of the Company and others and of public officials.

We have also assumed that:

- (i) the Registration Statement and any amendments thereto (including post-effective amendments) will have become effective under the Securities Act and will comply with all applicable laws;
- (ii) the Registration Statement shall not have been terminated, suspended or rescinded and will be effective and will comply with all applicable laws at the time the Securities are offered or issued as contemplated by the Registration Statement;

- (iii) except with respect to the Placement Shares, one or more Prospectus Supplements or term sheets will have been prepared, delivered and filed with the Commission describing the Securities offered thereby and will comply with all applicable laws;
- (iv) the Board, or a duly authorized committee thereof, shall have taken such action as may be necessary to authorize the issuance and sale of such Securities (other than the Placement Shares as to which we make no such assumption), and if applicable, establish the relative rights and preferences of such Securities, or other terms of such Securities, in each case as set forth in or contemplated by the Registration Statement, the Prospectus and any Prospectus Supplements relating to such Securities;
- (v) all Securities, including the Placement Shares, will be issued and sold in compliance with applicable federal and state securities laws and in the manner stated in the Registration Statement, the Prospectus and the appropriate Prospectus Supplement;
- (vi) a definitive purchase, underwriting or similar agreement with respect to any Securities offered or issued will have been duly authorized and validly executed and delivered by the Company (other than the Sales Agreement as to which we make no such assumption);
- (vii) any Securities issuable upon conversion, exchange or exercise of any Securities being offered or issued will be duly authorized, created and, if appropriate, reserved for issuance upon such conversion, exchange or exercise;
- (viii) after the issuance of any Securities offered pursuant to the Registration Statement, including without limitation the Placement Shares, the total number of issued shares of Common Stock or Preferred Stock, as applicable, together with the total number of shares of such stock issuable upon the exercise, exchange, conversion, or settlement, as the case may be, of any exercisable, exchangeable or convertible security (including without limitation any Warrant, Subscription Right or Unit), as the case may be, then outstanding, will not exceed the total number of authorized shares of Common Stock or Preferred Stock, as applicable, available for issuance under the Company's Certificate of Incorporation as then in effect;
- (ix) the consideration received for the issuance and sale of shares of Common Stock (including the Placement Shares) or Preferred Stock, as applicable, will be in an amount approved by the Board, or a duly authorized committee thereof, that is not less than the par value per share of such stock;
- (x) at the time of the issuance and sale of the Securities, the Company will be validly existing as a corporation and in good standing under the laws of the State of Delaware;
- (xi) the Indenture will be duly qualified under the Trust Indenture Act and the applicable Trustee is qualified to act as trustee under the Indenture;

HCW Biologics Inc.  
August 19, 2022  
Page 4

(xii) there shall not have occurred any change in law or the facts affecting the validity, legality or enforceability of such Securities, including Placement Shares; and

(xiii) none of the terms of any Securities to be established subsequent to the date hereof, nor the issuance and delivery of such Securities, nor the compliance by the Company with the terms thereof, will violate any applicable law or will result in a default under or breach of any agreement or provision of any instrument or agreement then binding upon the Company, or any restriction imposed by any court or governmental body having jurisdiction over the Company.

Our opinion herein is limited to the General Corporation Law of the State of Delaware and, with respect to the opinions set forth in paragraphs (3) through (6) below, the laws of the State of New York, and we express no opinion as to the effect on the matters covered by this letter of the laws of any other jurisdictions.

With respect to our opinion expressed in paragraph (7) below, we have assumed that, upon the issuance of any of the Placement Shares, the total number of shares of Common Stock issued and outstanding and reserved for future issuance will not exceed the total number of shares of Common Stock that the Company is then authorized to issue under its Certificate of Incorporation, as then in effect.

Based on the foregoing and in reliance thereon, and subject to the assumptions, exceptions, qualifications and limitations set forth herein, we are of the opinion that:

1. The Common Stock (other than the Placement Shares) will be validly issued, fully paid and nonassessable at such time as: (a) the terms of the issuance and sale of the Common Stock have been duly authorized by appropriate action of the Company; and (b) the Common Stock has been duly issued and paid for as contemplated by the Registration Statement, the Prospectus and any Prospectus Supplement relating thereto.
2. The Preferred Stock will be validly issued, fully paid and nonassessable at such time as: (a) the terms of the issuance and sale of the Preferred Stock have been duly authorized by appropriate action of the Company; (b) an appropriate certificate of designation relating to the applicable series of Preferred Stock has been filed with the Secretary of State of the State of Delaware in the form and manner required by law; and (c) the Preferred Stock has been duly issued and paid for as contemplated by the Registration Statement, the Prospectus and any Prospectus Supplement relating thereto.
3. The Debt Securities will constitute valid and binding obligations of the Company at such time as: (a) any such supplemental indenture has been duly authorized, executed and delivered by the Company and the Trustee (together with the Base Indenture, the "Indenture"); (b) the Trustee is qualified to act as trustee under the applicable Indenture; (c) the forms and the terms of the Debt Securities and their issuance and sale have been duly established in accordance with the applicable Indenture and approved by appropriate action of the Company, and the Debt Securities have been duly executed and delivered by the



HCW Biologics Inc.  
August 19, 2022  
Page 5

Company and authenticated by the Trustee, in accordance with the applicable Indenture; (d) the applicable Indenture has been duly qualified under the Trust Indenture Act of 1939, as amended; and (e) the Debt Securities have been issued and paid for as contemplated by the Registration Statement, the Prospectus, any Prospectus Supplement relating thereto and the applicable Indenture or a supplemental indenture thereto.

4. The Warrants will constitute valid and binding obligations of the Company at such time as: (a) applicable warrant agreement relating to the Warrants has been duly authorized, executed and delivered by the Company and the applicable warrant agent; (b) the forms and the terms of the Warrants and their issuance and sale have been duly established in accordance with the applicable warrant agreement, if any, and the applicable definitive purchase, underwriting or similar agreement, and approved by appropriate action of the Company; (c) the Warrants have been duly executed and delivered by the Company and authenticated by the applicable warrant agent in accordance with the applicable warrant agreement; and (d) the Warrants have been issued and paid for as contemplated by the Registration Statement, the Prospectus, any Prospectus Supplement relating thereto and the applicable warrant agreement.

5. The Subscription Rights will constitute valid and binding obligations of the Company at such time as: (a) the applicable subscription rights agreement relating to the Subscription Rights has been duly authorized, executed and delivered by the Company and the applicable subscription rights agent; (b) the forms and the terms of the Subscription Rights and their issuance and sale have been duly established in accordance with the applicable subscription rights agreement and approved by appropriate action of the Company; (c) the Subscription Rights have been duly executed and delivered by the Company in accordance with the applicable subscription rights agreement; and (d) the Subscription Rights have been issued and paid for as contemplated by the Registration Statement, the Prospectus, any Prospectus Supplement relating thereto and the applicable subscription rights agreement.

6. The Units will constitute valid and binding obligations of the Company at such time as: (a) the applicable unit agreement relating to the Units has been duly authorized, executed and delivered by the Company and the applicable unit agent; (b) the forms and the terms of the Units and their issuance and sale have been duly established in accordance with the applicable unit agreement, if any, and the applicable definitive purchase, underwriting or similar agreement; (c) the Units have been duly executed and delivered by the Company in accordance with the applicable unit agreement, the applicable definitive purchase, underwriting or similar agreement; and (d) the Units have been issued and paid for as contemplated by the Registration Statement, the Prospectus, any Prospectus Supplement relating thereto and the applicable unit, purchase, underwriting or similar agreement.

7. The Placement Shares, to be issued and sold by the Company, have been duly authorized and, upon issuance, delivery and payment therefor in the manner contemplated by the Registration Statement and Sales Agent Prospectus and in accordance with the resolutions duly adopted and to be duly adopted by the Board, or a duly authorized committee thereof, with respect to the offer, sale and issuance of the Placement Shares, will be validly issued, fully paid and non-assessable.

The opinions set forth in paragraphs (3) through (6) above are subject, as to enforcement, to (a) the effect of bankruptcy, insolvency, liquidation, receivership, moratorium, reorganization, fraudulent conveyance or similar laws relating to or affecting the rights of creditors generally; (b) general principles of equity, including, without limitation, concepts of materiality, reasonableness, good faith, fair dealing, and the rules governing the availability of specific performance or injunctive relief, whether enforcement is sought in a proceeding in equity or at law; and (c) provisions of law that require that a judgment for money damages rendered by a court in the United States be expressed only in United States dollars.

We hereby consent to the reference to us under the heading "Legal Matters" in the Prospectus and to the filing of this opinion as Exhibit 5.1 to the Registration Statement. By giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations promulgated thereunder.

Very truly yours,

/s/ ORRICK, HERRINGTON & SUTCLIFFE LLP

ORRICK, HERRINGTON & SUTCLIFFE LLP

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We have issued our report dated March 29, 2022 with respect to the financial statements of HCW Biologics Inc. included in the Annual Report on Form 10-K for the year ended December 31, 2021, which is incorporated by reference in this Registration Statement. We consent to the incorporation by reference of the aforementioned report in this Registration Statement, and to the use of our name as it appears under the caption “Experts.”

/s/ GRANT THORNTON LLP

Miami, Florida  
August 19, 2022

**Calculation of Fee Filing Tables**  
**Form S-3**  
(Form Type)

**HCW Biologics Inc.**  
(Exact name of Registration as Specified in its Charter)

**Table 1 – Newly Registered Securities**

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee	
<b>Newly Registered Securities</b>									
Fees to be Paid	Equity	Common stock, par value \$0.0001 per share	457(o)						
	Equity	Preferred stock, par value \$0.0001 per share	457(o)						
	Debt	Debt securities	457(o)						
	Other	Warrants	457(o)						
	Other	Subscription Rights	457(o)						
	Other	Units	457(o)						
	Unallocated (Universal) Shelf	—	457(o)	(1)	N/A(2)	\$100,000,000	\$0.0000927	\$9,270	
	Total Offering Amounts						\$100,000,000		
	Total Fees Previously Paid						—		
	Total Fee Offsets						—		
	Net Fee Due						\$9,270		

- (1) There is being registered hereunder an unspecified number of shares of (a) common stock, (b) preferred stock, (c) debt securities, (d) warrants to purchase common stock, preferred stock or debt securities of the Registrant, (e) subscription rights to purchase common stock, preferred stock or debt securities of the Registrant, and (f) units, consisting of some or all of these securities in any combination, as may be sold from time to time by the Registrant. Any securities registered hereunder may be sold separately or as units with other securities registered hereunder. There is also being registered hereunder an unspecified number of shares of common stock, preferred stock and debt securities as shall be issuable upon conversion, exchange or exercise of any securities that provide for such issuance. In no event will the aggregate offering price of all types of securities issued by the Registrant pursuant to this registration statement exceed \$100,000,000. Pursuant to Rule 416(a) under the Securities Act of 1933, as amended, or the Securities Act, this registration statement also covers any additional securities that may be offered or issued in connection with any stock split, stock dividend or similar transaction.
- (2) The proposed maximum offering price per share and proposed maximum aggregate offering price for each type of security will be determined from time to time by the Registrant in connection with the issuance by the Registrant of the securities registered hereunder and is not specified as to each class of security pursuant to Instruction 2.A.iii.b of Item 16 of Form S-3 under the Securities Act.