

# Spurring Entrepreneurship and Innovation in Stormwater Markets<sup>1</sup>

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## Introduction

In July 2014, the Philadelphia Water Department (PWD) launched an innovative competitive grant program to encourage the development of green infrastructure on private property. Green infrastructure practices—which include tree trenches, rain gardens, green roofs, and porous pavement—restore the landscape’s ability to retain stormwater on or near where it falls, keeping polluted runoff out of municipal systems and out of waterways, rivers, and oceans. Philadelphia’s program, called the Greened Acre Retrofit Program (GARP), encourages contractors or design/construction firms to compete for limited public grant funding by aggregating and bringing to PWD the lowest-cost retrofit opportunities available on private land. The availability of public dollars through GARP is intended to create a competitive green infrastructure market that can help PWD source low-cost stormwater management, while also generating a potentially new line of business for engineering/design/construction firms. Private property owners in Philadelphia also benefit from GARP, as its funding provides a means for private property owners to reduce the impervious area on their parcels and thereby reduce their monthly stormwater management fees.

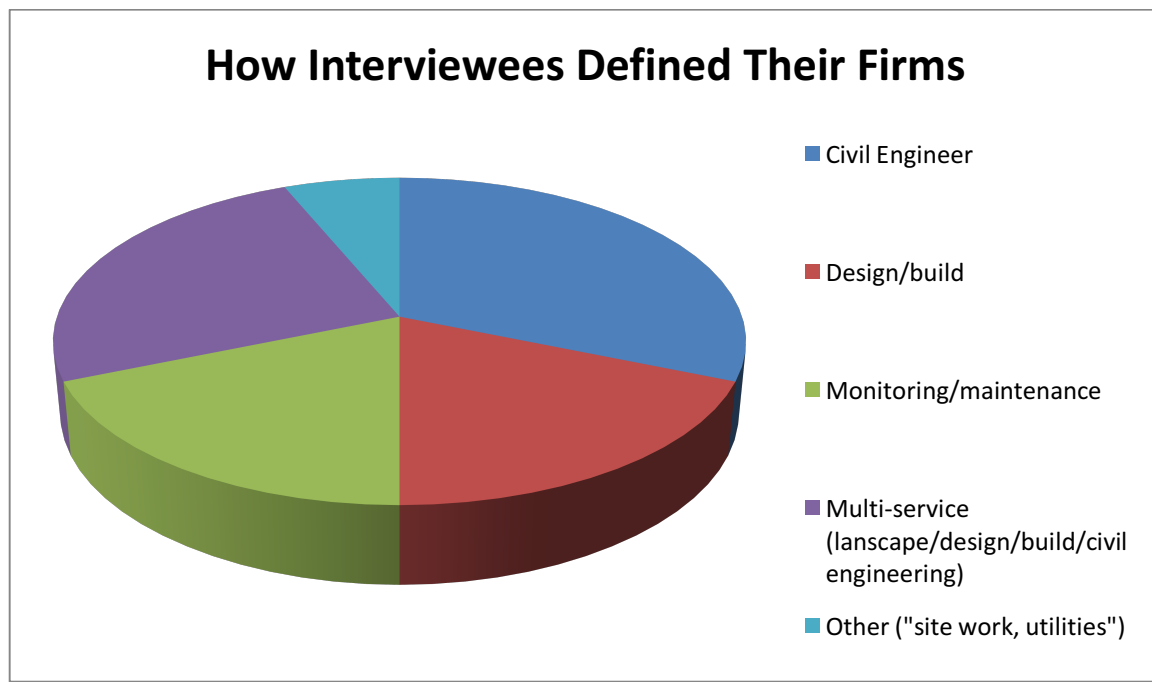
Today, two years after the launch of GARP, PWD is interested in understanding how the Program could be modified to encourage a larger number of vendors to submit GARP applications and how GARP could stimulate innovative approaches to stormwater management, for example, more vegetated stormwater practices rather than sub-surface detention.

The Natural Resources Defense Council (NRDC), which helped PWD envision the GARP structure, and the Sustainable Business Network of Greater Philadelphia (SBN), which hosts the Green Stormwater Infrastructure Partners group, are both very familiar with GARP and well-positioned to help PWD answer these important questions through outreach to local service providers. Over the course of approximately six weeks, NRDC and SBN interviewed approximately twenty local firms to understand their perceptions of GARP and to hear first-hand what changes to the program structure would make it

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<sup>1</sup> Report prepared for the William Penn Foundation by Alisa Valderrama, Senior Policy Analyst, The Natural Resources Defense Council (NRDC), with assistance from Anna Shipp (Sustainable Business Network of Greater Philadelphia) and Roger Baneman (NRDC). Interviews were conducted by Alisa Valderrama and Anna Shipp of the SBN). Funding for this report was provided by the William Penn Foundation.

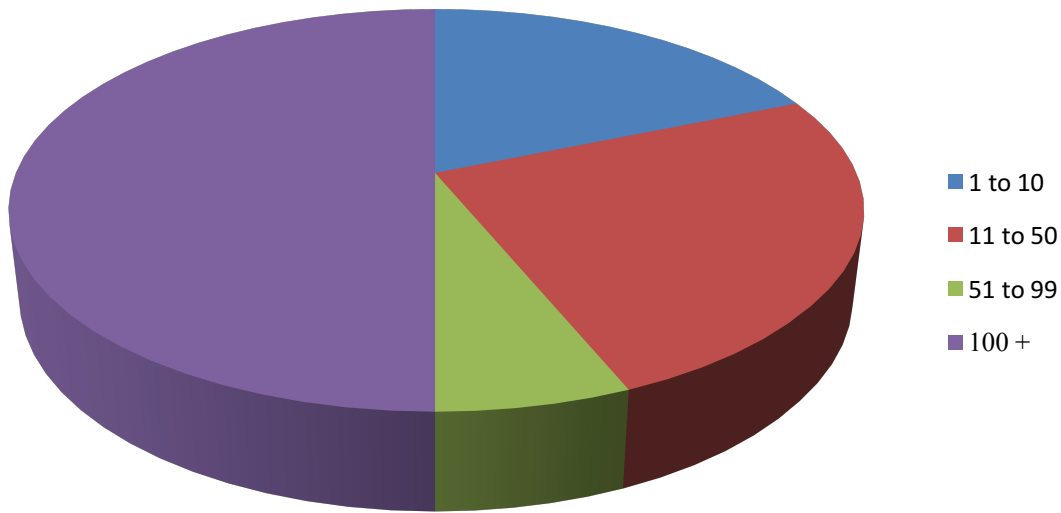
easier for them to submit GARP applications and prepare innovative project plans.<sup>2</sup> We interviewed a range of design, build, engineering, and maintenance firms, all of whom had experience with green stormwater infrastructure in some capacity. Some of the firms interviewed were major firms operating in the region; others were small to medium sized firms local to the area. While some of the firms we interviewed had participated in GARP's sister program, the Stormwater Management Incentives Program (SMIP), none of the firms we interviewed had participated in GARP. This report highlights the findings from our interviews of these firms and synthesizes several recommendations for PWD's consideration.



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<sup>2</sup>. The list of vendors and the interview questions were collaboratively generated by PWD, SBN, and NRDC. The list of firms interviewed is provided in Appendix 1. The interview questions are provided in Appendix II.

## Firm Size (Number of Full Time Employees)



### Summary of Recommendations

Challenge	Recommendation for PWD
Difficult for firms to reach out to /assess property owner interest in GARP	<ul style="list-style-type: none"> <li>✓ Develop a clearinghouse of property owners interested in stormwater retrofits</li> </ul>
GARP's current grant disbursement structure is not suited for vendors (engineering and design firms) business models	<ul style="list-style-type: none"> <li>✓ Develop a phased payment structure for GARP that relieves some of the upfront financial burden and risk to vendors</li> </ul>
The cost/acre PWD offers through GARP does not cover the work that GARP requires of vendors.	<ul style="list-style-type: none"> <li>✓ Increase the amount PWD offers per greened acre through GARP to meet or exceed that which is offered through SMIP.</li> <li>✓ Consider a tiered funding approach that incentivizes/provides larger grant dollar amounts for vegetated practices.</li> </ul>
Difficulty in aggregating ten acres given the property types/size of properties in Philadelphia's combined sewershed	<ul style="list-style-type: none"> <li>✓ Allow for flexibility in the acreage required for approval.</li> <li>✓ Consider a tiered funding approach that incentivizes/provides larger dollar grant amounts for larger areas managed.</li> </ul>

<p>Vendor firms need more information about PWD's grant programs (SMIP and GARP) and the requirements to participate in GARP in particular</p>	<ul style="list-style-type: none"> <li>✓ Provide more information about GARP to potential vendors via the website, case studies, webinars, and/or workshops/seminars.</li> <li>✓ Consider a merger of SMIP and GARP to create one single flexible program.</li> <li>✓ Consider speaking to property owners to hear their perspective on both SMIP and GARP, and hosting workshops to hear directly how the program could better engage them.</li> </ul>
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Interview Findings

Most interviewees' responses can be understood as a discomfort with the risk/reward proposition presented by the GARP. Firms struggled to see how the potential payoff provided by GARP was sufficient for the firms to take on the cost and risk of preparing GARP applications, which require a minimum of approximately ten acres' worth of impervious area managed. As detailed below, firms commonly cited challenges accessing information related to property ownership and owner outreach, and cited the mismatch between the reimbursement offered by the GARP and the model of the traditional fee-for-service structure of most design/build/engineering firms.

1. Challenges accessing property owners and assessing owner interest in GARP

GARP, in contrast to its predecessor, the Stormwater Management Incentive Program (SMIP), is designed to put vendors "in the drivers' seat" of retrofit projects. Under GARP, vendors can locate and reach out to potential property owners, develop stormwater retrofit project plans on behalf of these property owners, and submit these plans directly to PWD in the form of a GARP application. Once an application is approved, the GARP funds flow directly to the vendor; the property owner is only a joinder to the grant agreement. The idea of putting vendors in control of the GARP application process was intended to leverage the fact that the vendors are the ones who most immediately stand to profit from GARP – therefore it is the vendors who should be most motivated to locate owners with suitable GARP properties. While property owners also benefit financially from GARP, their benefit is more spread out over time, as it accrues over time in the form of reduced stormwater fees once they manage the stormwater from the impervious area on their properties.

However, the GARP model assumes that vendors' business models can accommodate a sales and customer acquisition role. Our interviews suggest that many firms are either unable or unwilling to engage in a sales/lead-generating role:

*“We have no real estate expertise so we would not be able to afford to do all the background research to even begin to identify areas where this type of [GI retrofit] project could be feasible.”*

*“...information costs are too high for market participants to find one another...”*

*“If we have an existing client with a large property we might present GARP as an option, but it’s rare to find someone with ten acres. Alternatively, we could pursue someone, but that is also challenging.”*

At least one firm we spoke with was aware that PWD provides a “parcel viewer” at [www.phillystormwater.org](http://www.phillystormwater.org). This site provides details on specific parcel boundaries, owner name (as provided by property assessor) and property size and impervious area. However, most firms struggled to understand how their company could fulfill the “sales” role that GARP effectively requires once an appropriate site(s) is located.

*“We don’t want to call owners cold. We don’t have sales staff; we respond to invitations to bid. It’s simple and it keeps us busy.”*

*“We need a pathway to owners.”*

*“The biggest challenge [to participate in the GARP] is the upfront legwork and staffing...it’s a lot of work to contact property owners and do the upfront planning to get to ten acres.”*

*“...Am I going to need to hire someone to go out and knock on doors? We don’t have a sales person.”*

#### Recommendation to remedy the challenge of identifying property owners interested in GARP

- Interviewees suggested that an online platform could help them connect with property owners in need of services or, conversely, provide a venue for owners to connect with firms that can provide retrofit services and submit GARP grants on their behalf. All interviewees who were asked agreed that an online customer connection platform would be very useful:

*“If we knew which property owners were interested that would be great...”*

*“...Any type of database of interested owners would be helpful.”*

*“Owner maps are already available including stormwater fee. So finding owners is easy. But actual follow-up and contacting is what is tough.”*

*“A clearinghouse would be very helpful...like gangbusters!”*

## 2. Engineering and design firms believe that their firms' profit models are poorly suited to GARP

The components of a GARP application include a list of participating properties, contact information for each property, and signed letters of intent from each participating property owner. In addition, applicants must submit a concept plan—including the important features of the site(s), such as topography, to demonstrate where water is flowing on the site(s). The concept plan must also indicate the location of all planned stormwater management installations and location of any new utilities that would be needed to convey stormwater. A full engineering drawing is not needed, but the application must go beyond a “desktop analysis” done on a computer. Some validation of the concept plan from a site visit is necessary.

A common theme in our interviews was hearing from vendors that their “fee for service” model is ill-suited to the GARP model. All except one of the firms we interviewed are fee-for-service firms, whose profit structure is based on billing of clients at an hourly rate. The steps involved in submitting a GARP application require firms to spend many hours of their time locating appropriate GARP sites, contacting owners, and then finally preparing site concept plans and obtaining owner agreement to the plan. While GARP does reimburse these “pre-development” costs once the application is successful, every firm we spoke with indicated that the lag between project initiation (e.g., identifying owners) and getting paid by PWD was the single biggest challenge to their participation in GARP. The only type of firm that is structured to succeed under the current GARP structure, interviewees indicated, would be a “developer”—a firm that is accustomed to taking on debt at the outset of a project and could get comfortable with waiting to earn a profit.

*“We are not an aggregator or developer—we’re a service provider...we’ve been considering starting a sister company that could apply for GARP.”*

*“Grants are too much work and too much overhead if we are getting work otherwise. Not worth it.”*

*“We have the design team and maybe we have interested clients, but it’s the time between the ‘interest’ and the ‘work’ ...that’s the jam.”*

*“We know GARP applications have a high success rate, but getting there is the problem.”*

*“...all these steps can take as much as six months of time and possibly hundreds of hours--before getting a check.”*

*“The reward is direct invoicing [with GARP], but it’s not worth the work; we’re talking full billable weeks to get all the owners in line. I can do one SMIP at a time and make a higher rate per project and it’s a safer bet.”*

*“...in [this] scenario, there is no client and therefore no way to receive any reimbursement for our service. It is like we are asked to be working for everyone else pro bono.”*

*“Doing an existing features analysis for ten acres might cost between \$8-10k.”*

*“We could spend \$15-20k of our own time and survey the area and do some engineering to come up with a plan...only to find out that PWD won’t support it or the owner won’t sign.”*

*“GARP is asking us to act more a development entity, not an entity that needs to get paid by the hour.”*

*“A low-end concept for ten acres would cost \$3-5,000.”*

*“...it’s hard to estimate what the upfront costs would actually be.”*

Interviewees (none of which had prepared a GARP application) estimated that they would likely spend an average of \$15-\$20,000 in billable hours preparing a GARP application. All agreed that this cost was prohibitive to their participation in GARP. Some firms erroneously believe that an engineering survey of the site would also be needed, which they estimated could cost as much as \$50,000 for ten acres.

When asked how much they might be willing to spend, in billable hours, to develop a GARP application, firms indicated that they might be willing to spend approximately a few thousand (~\$1,500-\$2,000) upfront.

At least one vendor indicated that aggregating ten acres’ worth of sites presented a problem for building owners as well as service providers:

*“Property owners [who want to move forward with a retrofit] don’t want to wait around to get bundled with others and have their timetable dictated by other entities.”*

*“...are owners willing to make the time commitment to explore the possibility [of GARP]? The perspective of the building owner should be considered as well as the aggregator.”*

*“...we charge owners for our designs. But clients don’t want to pay for [GARP] designs because they don’t know if the GARP application will be successful. It’s all new and risk and front-end investment that clients aren’t happy about. It would be helpful to know the acceptance rate of GARP applications. Then clients might be more likely to pay for design.”*

### Bridge capital is not the answer

With so many firms indicating that the upfront capital investment was the major barrier to their ability to participate in GARP, we asked whether low or no-cost capital “bridge” financing would be helpful. The response was universal that bridge capital would not help these firms to participate in GARP. No firm we asked would be willing to take on debt, even at zero interest, to submit a GARP application. It would be tantamount, they indicated, to doing a free design, in the event that the project fell through and the firm had to re-pay the bridge loan.

*"...for [our] traditional landscape design work, if we do the design and a client decides to go with us, we'll absorb the fee, if not, the client pays for design."*

*"...bridge funding would not be helpful because there is too much uncertainty about the project. There is other, more certain, work we could be doing."*

*"We need a scenario where even if the project does not move forward we don't need to give the money back."*

*"...[Would I take a loan if I had] to give the money back? Nope."*

*"We could not participate if we had to give the money back if a deal falls through. It would never be worth taking that risk. On the private side we would never take that risk."*

*"It's not a finance problem; it's a program structure problem."*

*"No firm will work on a loan basis."*

*"[Our firm] is not insured to be a design-build firm. In fact, few firms are insured this way. We would need a contractor to do the build; so the [GARP] would need to be restructured to cover the cost of design as a "phase one," and construction covered as a "phase two." But the \$90k needs to come up too. At least make it even with SMIP."*

#### Recommendation to help traditional pay-for-service firms to participate in GARP

- Create an improved GARP application process that would reduce the financial risk for vendors that would like to participate in GARP. Firms nearly all agreed that a phased approach to the application process, which acknowledges the distinct "pre-development," "design," and "construction" phases of a project, and provides reimbursement for firms earlier in the GARP application process would be very helpful, and more attractive than a bridge loan. (See diagram below.) This 'phased' approach could have several variations, but the essential idea is to enable the applicant to get paid for the hours of "pre-development" work (e.g., owner identification, outreach, and project concept plan) before advancing to the engineering and construction phases of a GARP project.

*"[GARP] is a high-risk proposition from [my] standpoint. If there was a way to get a portion of the grant paid upfront there would be better conditions."*

*"Engineering firms cannot survive if they don't make money. We can donate some but time is money. If we were paid to develop an application and work with a landowner, that would change things."*



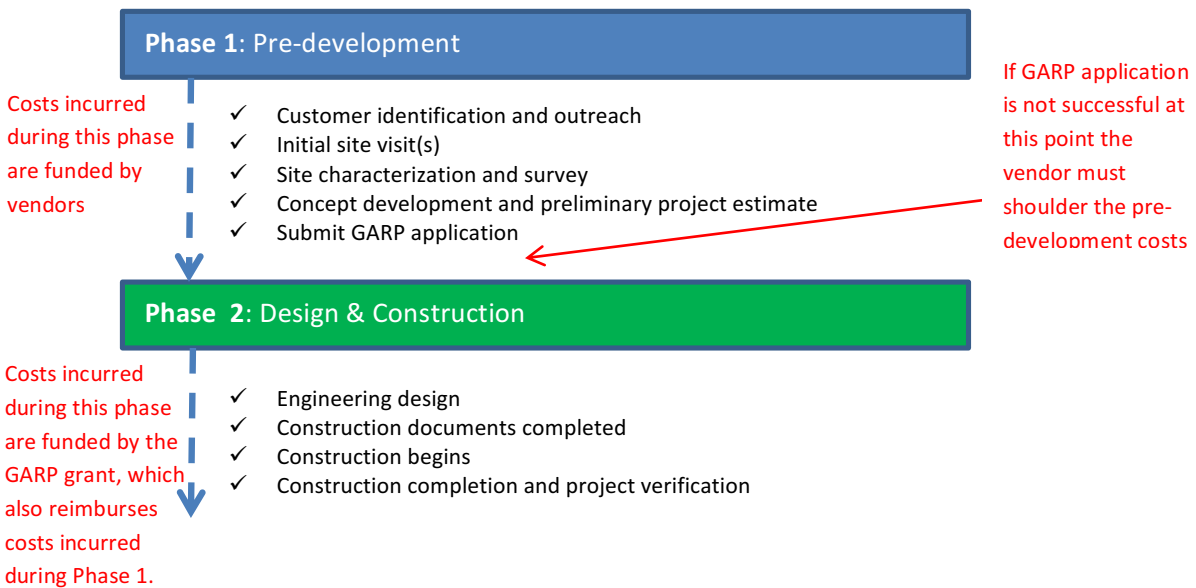
“...require less design upfront. [Let us] do design based on GIS and readily available data and prepare a minimum conceptual submission.”

“...[PWD should provide]...interim funding for a base map. [We should be able to] come to PWD with a base map and a letter of interest from a property owner, and based on that get funding [that would help us to get to] the next step.”

### Current and Proposed GARP Structures

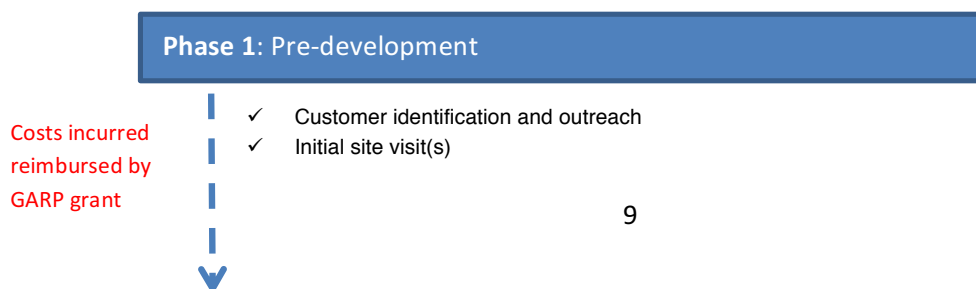
#### 1. Current GARP Structure:

Vendors Must Assume Financial Risks of Project until Application is Approved



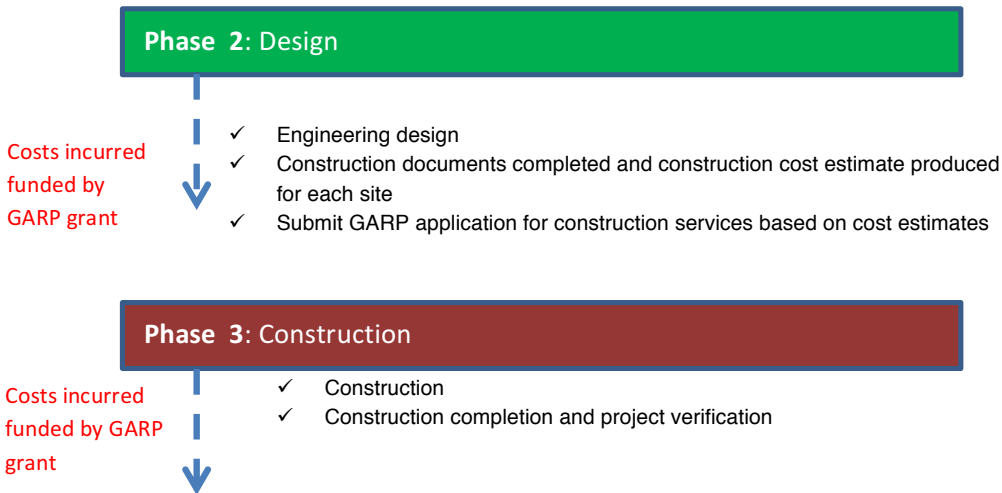
#### 2. Proposed 3-phase GARP Structure:

PWD Shares Financial Risks of Project with Vendors



- ✓ Produce proposal and cost estimate for engineering services and any pre-development work completed

**Vendor submits GARP application for reimbursement of pre-development work**



### 3. Firms believe that aggregating ten acres is infeasible

Most firms agreed that while economies a retrofit on a larger site will generally be cheaper per square foot than a smaller site, the same economies of scale did not apply to non-contiguous sites, as would be the case with nearly all GARP projects. Moreover, firms did not see how they could easily get many property owners coordinated. They felt that most the sites in the combined sewer area were less than one acre, and thus would require them to reach out and acquire at least ten discrete projects to bundle together. Some respondents suggested merging aspects of SMIP and GARP to combine the vendor-led aspects of GARP with smaller (no size minimum threshold under SMIP) project size.

*“If I had five properties [equaling a total of ten acres] in the combined sewer area I’d go for GARP; it makes sense from a contracting perspective, but I just haven’t seen those situations.”*

*“It’s possible that I could combine SMIP projects but they are all [happening] on different timelines, so finding [ten acres’ worth] of properties that are ready at the same time is tricky”*

*“The ten-acre [requirement] isn’t providing the economy of scale to make the \$80-\$90k/acre threshold...I am also unsure if PWD would be flexible with acres if presented with an opportunity to fund a project [of slightly less than ten acres.]”*

*“...because [my firm] is in touch with a lot of smaller properties, it makes sense to go directly for multiple SMIP grant versus getting more properties together for GARP. Ten acres is a lot to get to when properties are one acre.”*

*“There are not really a large enough number of [large] sites to make firms think there is a real line of business here.”*

One interviewee suggested that PWD could more easily achieve larger-scale greened acre projects if it would allow project developers to co-mingle public and private runoff:

*“...this would create efficiencies with storage and tie-ins, which saves costs and enables economies of scale. If a site is open...we could easily get twenty percent more capture at many of these sites...”*

#### Recommendation to help firms achieve ten acre projects:

- An incentive structure that provides bonuses (or which offers higher dollar value per square foot of impervious area managed) for larger “portfolios” of retrofit projects.

#### 4. Interviewees believe that the GARP funding level is too low

Firms universally indicated that the \$90k/greened acre offered by GARP was insufficient to cover the costs of a “greened acre” retrofit project. Particularly considering the less risky and more profitable green infrastructure projects available through PWD’s public projects or even through SMIP grants, firms said that there was no strong reason to turn away from “safer” and more lucrative projects to try to put together a GARP application at the current funding level. When asked what would be required to encourage above-ground vegetated (rather than sub-surface) practices, which would provide more co-benefits for communities, the answer was, that it was just a matter of PWD offering more per acre of impervious area managed.

*“Even with SMIP, where PWD offers \$100k an acre, it’s tight. \$80-90k an acre [under GARP] is not enough especially when it’s more work.”*

*“...realistically we would need \$200k+ per greened acre”*

*“...[at the current grant level] I can’t make money, even if it’s a dream site.”*

*“I pay all my sub-contractors first, then I pay myself. I have to keep my relationships with my subs. After paying them, GARP does not leave enough for me.”*

*There is no incentive to do GARP over SMIP. If GARP paid more, say \$125k an acre...”*

*“It would be an illogical business model for us to try and do aggregation of sites, coordinate all the property owners, have them all sign maintenance agreements, and then still do all of the analysis and plans ourselves. Economically, I don’t see how we re-coup the costs of all the legwork involved.”*

*“There is no flexibility on cost per greened acre depending on site constraints. Some are easy, some are more complex—maybe PWD needs to put together a sliding scale based on site constraints...”*

*“...\$150k [per greened acre] would be very helpful to firms and it’s still a huge win for the city compared to the cost of public projects. Then there will be competition and market forces will work in PWD’s favor—costs will be driven down.”*

*“PWD should explore a scaled funding system and adjust their grants to provide more grant dollars for practices that they want to see”*

*“Offer \$150k for the preferred [vegetated] solution, and tier it so that \$90k is offered for sub-surface...”*

*“Funding level of GARP is the problem. Traditional firms simply cannot get costs down to [\$90k/acre]. In the D.C. program, reimbursements for completed projects are much higher, back of the envelope numbers look much better.”*

#### Recommendation on the funding level for GARP

- Consider raising GARP funding levels to make it equal to SMIP at a minimum but also consider a higher baseline for GARP given the time required to aggregate properties, such as a minimum of \$150k per greened acre.
- To create an incentive for above-ground or vegetated practices (see Table 3.2-4: SMP Hierarchy in PWD’s Stormwater Management Guidance Manual V3.0) , a tiered grant program could offer a premium or “bonus” for green infrastructure practices that provide co-benefits such as improved aesthetics, improved air quality, or reduced urban heat impact.

#### 5. Firms seemed surprisingly poorly informed about GARP—even major local players did not have strong grasp of the program basics

There were many contradictory statements made by different firms that indicated a low level of knowledge about fundamental characteristics of GARP. Common misconceptions included the belief that a full engineering review was needed as part of the application, or that the ten acre minimum was a strict threshold, or that GARP would only reimburse construction costs.

*“Some case study information on past GARP projects would be helpful. It would be nice to see how other contractors have been successful with the program...get more insight into the process.”*

*“...what about workshops for contractors...?”*

*“There is not a lot of information or publicly accessible information about the [GARP]—just the one pager.”*

*“We would like more information from PWD—indicating, for example, the types of projects that have been approved, to explain how GARP works. Then our clients might be more into it.”*

*“Website is confusing. Does it need to be a ten-acre parcel?”*

#### Recommendations to inform potential GARP participants

- Include more information on the GARP website about the specific requirements for what firms need to submit and provide case studies showing different examples of successful GARP applications.
- PWD, working with local partners such as SBN, or the Building Owners and Managers Association (BOMA), could host webinars showcasing detailed case studies of completed GARP projects, with a focus on the step-by-step of how the projects were originated and submitted.
- PWD should consider merging the SMIP and GARP programs into one, larger, and more flexible program that rewards aggregation but does not require it, and enables either the vendor or the property owner to submit an application. This would eliminate competition between grant programs and simplify the options for vendors.

## Appendix I: Participating Firms

AKRF

Bohler Engineering, PA, LLC

Engineering and Land Planners

IMHydro

Maser Consulting

Michael Baker International

NTM Engineering

OptiRC

PEER Environmental

Pennoni

Pennsylvania Horticultural Society (PHS)

Rodriguez Consulting, LLC

Roofmeadow

Seravalli, Inc.

Shearon Environmental Design Company

Stantec

The RBA Group

United American Builders

## Appendix II: Interview questions

### Background Questions

First Name, Last Name, Title, Firm, Year founded, Number of full-time employees, approximate annual revenue, Core business, Core GSI-related service, Company HQ address, location of local Branch(es).

### GARP-specific questions:

1. What, if any, work has your company done for PWD / with PWD funding (i.e., prime/subcontractor vs. grant recipient, other)
2. Do you know about GARP? If so, how did you learn about it?
  - a. Has your firm considered participating? Why/Why not?
3. What, if any, changes could better support your firm to participate?
  - a. If operating capital is a challenge, would access to bridge funding (grant, loan) be helpful?
    - i. On what terms? What would repayment terms need to look like?
    - b. If not, what other changes would help make GARP work better for your firm?
4. How much do you think your firm would spend in order to acquire a GARP grant?
  - a. How would you/do you value the staff time that would be needed to seek and acquire clients [Encourage them to elaborate as much as they can]
5. What profit do you currently make on projects that are similar to GARP?
6. How big does the market need to be in order for you to believe that it's worthwhile to adapt to GARP?"
  - a. Where in the process is the main challenge for your firm? [Encourage them to elaborate as much as they can]
7. What additional tools or resources would be useful?