USCRTF Written Comment Supplement

Preliminary orientation remarks:

About Surfrider Foundation Rincón (SFR):
Surfrider Foundation Rincón is a community-based non-profit organization whose primary focus is on coastal and marine environmental conservation and protection in northwestern Puerto Rico. SFR was started in 2001, the first chartered chapter of the national Surfrider Foundation to exist in a US territory and function bilingually. Since its' inception SFR can count among its' many successes our pivotal role in the creation of the Reserva Marina Tres Palmas (RMTP) in Rincón in 2004 (the first co-managed Marine Protected Area in the mainland of PR, designed to specifically protect the threatened elkhorn coral *(acropora palmata)* colonies located there) and leading the Steering Committee which created the Management Plan (formally accepted in 2008) which has since been used to design other management plans for co-managed MPAs in PR. Subsequently the chapter conducted a 4 year "Marine Debris Removal and Reef Restoration" project which removed thousands of pounds of trash (including more than 500 tires) from the RMTP and, in its final year, was extended to include other elkhorn coral reefs in western PR. Most recently was our integral role in creating, promoting and the eventual passing of Municipal Ordinance #6, 2013-14 "Proyecto Verde" making Rincón the first municipality in PR to prohibit the use of single-use plastic shopping bags in the county. Regularly scheduled chapter activities include an outreach and education program, monthly beach cleanups, and monthly general meetings open to the public. Currently we have entered into a partnership with Rincón's Dept. of Public Works and the Recycling Dept. to sponsor the installation of "Estaciones Verdes" recycling containers/centers at various popular beaches and coastal areas, to supplement the approximately 150 garbage containers the chapter has previously set up in the Rincón -Aguada coastal zone.
One of our most significant achievements has been conducting weekly water quality monitoring at dozens of beaches in NW Puerto Rico, our Blue Water Task Force (BWTF) program, which has been in place since 2007. The BWTF utilizes the EPA-approved Enterolert Defined Substrate Technology to detect the presence of entrococcus bacteria as an indicator species of fecal contamination. Currently about 20 sites are monitored weekly (not including sampling specifically done for research or collaboration purposes) including a satellite program created in partnership with the non-profit Rescate Playas Isabela whose lab is located at the Environmental Sciences facility at Ramey School, Aguadilla. Since its inception the BWTF has conducted at least one collaborative research project per year with various academic, scientific or non-profit organizations, pertaining to water quality and/or microbiological issues, or coral reef ecosystem health. The BWTF Rincón is generally considered the most successful and longest-running citizen-science program in PR (comparable to the Junta de Calidad Ambiental's beach monitoring program), and we are currently collaborating with various entities such as UPR-RUM, CariCOOS, Caribbean Genome Center and Ridge to Reefs involving research pertinent to bacterial contamination and transport in watersheds and the coastal zone, its' effects on coral reef ecosystems and other marine life, as well as public health related factors, and research into alternative waste water treatment methods or monitoring.
The BWTF Rincón is currently applying to get their Rincón lab facilities certified by the federal EPA, which would make it the first community-run facility so certified.

About Steve Tamar:

- Permanent resident of Rincón PR since 1979.
- 1980-83 held various positions during the "No a la Planta de Carbón" campaign to successfully prevent the construction of a coal-fired electrical generating plant at various sites in the Aguada- Rincón- Mayaguez coastal zone.

- 1988-98 member of the Liga Ecológica Puertoriqueña de Rincón holding various non-board positions. Principal achievements: helping design and institute the first municipal recycling center in PR, established in Rincón 1993; helping draft and promote the successful passage of the first marine mammal/whale watching legislation in PR (enacted 1997); helping organize and conduct the Earth Day Rincón fairs, the first annually held Earth Day celebrations in PR 1994-98.
- 2001 – present member of Surfrider Foundation Rincón. Co-directed the "Salva Tres Palmas" campaign to create the RMTP, with various duties involving the development and acceptance of the Management Plan. Became Director of the BWTF Rincón 2007. Held various SFR executive committee positions since 2007, currently Co-Chair.
- 2012- present Advisory Board member of the Puerto Rican Parrot Genome Project, the first genome in the world to be sequenced using exclusively community-raised funds, and continuing efforts to protect and propagate this highly-endangered species.
- 2014-15 member of organizing committee, SFR co-sponsorship of ConGen 2015 in conjunction with the American Genetic Association and UPR, the largest international scientific meeting and symposium held in Rincón to date. Co-creator of the "Open Science" public lecture series.

Other memberships:

Caribbean Landscape Conservation Cooperative
Puerto Rico Climate Change Coalition
Enlace Latino de Acción Climática

Greetings,
The verbal comments I heard submitted to the USCRTF on Oct. 29 2015 in Fajardo, PR were all very pertinent and notable. In this written supplement I would expand on the comments I made regarding the areas of expertise that I personally have (marine reserves/protected areas, all aspects of water quality issues, and interfacing with Commonwealth governmental departments or agencies) which might also reinforce the spoken comments of others, and point out areas where I believe federal assistance or intervention is absolutely required for resolving critical issues.

To begin, I would like to repeat my initial spoken comment: that the immediate and hasty adoption of the Beach Action Value of 70 Colony Forming Units/100 mL of enterococcus for recreational waters by the PR EQB is an unconscionable and (frankly) embarrassing step backwards for public health monitoring on this island. Virtually all researchers I have asked agree that the new BAV of 70 CFU/100mL much more accurately reflects a critical human epidemiological value than the previous federal standard of 104. However most state agencies are objecting to its adoption due to their increased monitoring expenses, required re-testing, more frequent beach closings/flaggings etc. without the requisite increase in BEACH Act funding to pay for it. Most state agencies are attempting to negotiate an interim value for this reason. And most states are thus delaying adoption for two years while additional funding is found. Absolutely none of this is the case for PR. We already had an impressive equivalent standard of 34 CFU/100mL, one of the very few (perhaps the only) Commonwealth standard for public health monitoring (or anything else, for that matter) that was more rigorous than any US state or territory. Nothing is gained by this somewhat bizarrely precipitous action- the PREQB doesn't normally flag beaches, so there's no savings of time or money.
The reason I bring this to the USCRTF's attention is because, aside from the SFR BWTF program (which does have a strong marine environmental monitoring and research component), the only data available to the general public or, apparently, federal agencies, regarding marine water quality (and the recognized strong linkage between fecal bacteria contamination and various forms of reef ecosystem

degradation) is provided by the PREQB beach monitoring program. But now, without a careful scrutiny of the data entered into the pertinent PDF (whenever it is updated), a false impression is created of 'acceptable' water quality. This is, at the very least, misleading.

Section 1: Marine Protected Areas, the Reserva Marina Tres Palmas

Much testimony was given regarding the efficacy and cost-effectiveness of MPAs in preserving coral reefs and associated resources. Other strategies are also available, but for the current moment and the foreseeable future MPAs remain the preferred tactic. And the constant refrain I heard at the USCRTF regarding this topic was simply: "More, and bigger." This is undoubtedly true.

I would like to inform the USCRTF that SFR has already initiated the process to expand the RMTP in Rincón, with the eventual goal of tripling or quadrupling its area. Further, our goal is to integrate this with a larger proposal to create a Natural Protected Area involving protecting undeveloped land that borders or is close to the RMTP in the municipality of Rincón. This proposal is vital to keeping intact the watersheds that drain into the RMTP and preserving the natural vegetative cover that reduces sediments and contaminants carried by rainfall runoff into the environs of the nearshore reef system of the RMTP and its proposed expanded limits.

Obviously the participation of appropriate federal and Commonwealth agencies is required in this effort. But what I would want to emphasize to the USCRTF is the incredibly unique and valuable resource we are trying to protect. Consider: the *acropora palmata* in the RMTP has survived every single coral bleaching event recorded in the Caribbean with little or no damage; that despite the discovery of the coral disease white pox (or patching necrosis, caused by fecal bacteria infection) in the southern portion of the RMTP in 2009 the affected colonies are still alive (but still obviously affected) and the disease has not spread further- contrary to the almost inevitable course of this disease elsewhere in PR, Caribbean and US waters; that the recruitment rate of new coral colonies created by sexual reproduction has slowed but still continues despite the various effects of global climate change and local detrimental conditions. This, in my experience and knowledge, makes these elkhorn corals unique in Atlantic US territorial waters. The two most likely factors involved here are the exceptionally favorable physical conditions of the location of the corals in the RMTP, and the incredible genetic diversity these corals exhibit compared to most other elkhorn reefs.

RECOMMENDATIONS

- Federal support for the expansion of the RMTP and the further creation of a Natural Protected Area in its environs should be provided when solicited.
- Given that elkhorn coral is the generally preferred species for pioneer recolonization of dead reefs or other hard natural or artificial substrate, and is one of the few species whose growth rate is comparable to, or greater than, projected sea level rise rates: significant funding should be devoted to the development and creation of an elkhorn coral breeding facility in the Rincón area, based on genetic material provided from the RMTP. For various reasons that are outlined in Section 3, I believe such a facility should be administered and staffed by a collaborative group comprised of personnel of UPR- Mayaguez, federal agencies, and community members- with the eventual goal of devolving the majority of operational, managerial and administrative duties to a management board consisting of UPRM and community personnel. Such a facility plan has already been developed during the course of the SECORE project in Rincón, and was submitted to NOAA and Commonwealth agencies for approval by Dr. Mary Hagedorn of the Smithsonian Institution/ Hawaii Institute of Marine Biology in 2010, but was rejected for unclear reasons. I believe this facility plan should be revived and implemented as soon as possible, with the eventual goal of crossbreeding corals capable of surviving, growing and

reproducing under conditions forecast by climate change, with a relative immunity to white pox disease. These young colonies would then be transplanted out to repopulate dead nearshore reefs in PR, not only to provide new habitat for other marine species (especially in the vulnerable juvenile stage) but also provide mitigation affects against increasing storm damage/ erosion of coastal areas exacerbated by sea level rise. Such a facility would also give invaluable operational and research experience to a wide spectrum of UPR students, and create new skilled job training opportunities for the local community, with a additional benefit of generating long-term employment for both sectors.

NOTE: Such an effort would in no way replace the current efforts of coral farms / transplanting programs such as are conducted by Dr. Edwin Hernández. Those valuable efforts are obviously important and already functioning- however, they are based on the use of cloning new colonies of primarily staghorn coral *(acropora cervicornis)*, which lack the genetic diversity and disease resistance naturally exhibited by elkhorn coral within the RMTP. The breeding facility would be designed to supplement and diversify these efforts, not replace them.

Section 2: Water Quality Issues, Environmental, Recreational and Potable

Again, much testimony was given at the CRTF meeting regarding the relatively unknown extent of problems with water quality in PR, especially by Mr. Paco Lopez and Ms. Mary Ann Lucking. I can only echo and amplify that testimony- the true extent and gravity of such problems is virtually unknown, and to date there are very few successes in improving this situation. It is unfortunate to report that, despite the fact that because of various geophysical and socioeconomic reasons the Rincón area enjoys much better marine water quality than most of PR, the eight years' experience of SFR's water quality monitoring and research shows that virtually everywhere we look we find serious problems. Obviously this extrapolates to a hidden but grave risk to public and environmental health ubiquitous on the island. Perhaps a few statistics would frame the extent of the problem more clearly:

- Approximately 60% of PR households rely on septic tanks. In my almost 40 years of experience in the construction industry here, I have yet to see a 'correctly' built septic system for private homes- i.e. with both a wet and dry chamber and an adequate seepage field. Also, 'standard' maintenance of septic systems is exceedingly rare in my experience, and conducted only when catastrophic failure occurs.
- It is my understanding that in the entire federal system there are only 7 primary waste water treatment plants licensed by the EPA. Two serve small relatively remote municipalities on the US mainland. The other five are regional WWTPs in PR serving millions of people, operating under EPA waivers. The one I am most familiar with, located in Aguada, was generally considered to have a barely acceptable capacity when it was constructed in the early 1980s and due to engineering shortcomings it is considered the most poorly-designed WWTP in the federal system. The chapter is able to monitor the outfall of a municipal secondary treatment plant located in Isabela, and its performance does very little to give confidence that WWTPs of either type are, or even can be, operated in an EPA-compliant manner under current circumstances. The Aguada plant discharges into coastal waters that affect Rincón, Aguada and Aguadilla- all municipalities where beach-oriented tourism is a significant or major economic base, as well as containing valuable and federally-protected marine resources such as the RMTP.
- As is typical almost anywhere, the infrastructure of both sewage and potable water systems in PR is mostly old, poorly maintained and/or designed, and overstressed while at the same time

the appropriate Commonwealth agencies are understaffed and underfunded. However this situation is exacerbated in PR by the fact most of the initial facilities were under-engineered. This inevitably leads to situations where SFR's water quality program has for weeks detected geometric means of enterococcus bacteria along dozens of miles of coastline in the mid 100s, and most recently bacterial counts in local tap water in the 100s, without the appropriate agencies being able to respond in a meaningful and timely manner. And, to repeat, the Rincón area is in our experience one of the least-affected communities by these problems.

Thus problems with water quality appear to be widespread and very grave, and the challenges seemingly insurmountable. And this could well be an underestimate. However SFR has long considered these issues, and based on our experience, close contact with the local community, participation in relevant conferences and symposiums, meetings and discussion with experts, research collaborations, and consultation with the national Surfrider Foundation, we believe several valid strategies are available to immediately begin to address the most egregious of these problems. What follows is a list of recommendations that may or definitely must require federal assistance to pursue.

RECOMMENDATIONS

- Septic systems: This is the single most difficult issue to be dealt with, due to its ubiquity and the fact that most home owners are relatively or absolutely poor. The only realistic option here is an aggressive and long-term collaboration between the Commonwealth and local community groups/NGOs/non-profit groups to provide expert advice, economic incentives, co-payments and/or matching funds, and matching labor, along with a comprehensive outreach & education campaign. A WPA/CCC-type approach may work well for this. However, where federal funding and intervention is immediately required is to protect high-priority vital habitats, marine and freshwater resources (especially potable surface water sources) and areas with high touristic value. For reasons outlined in Section 3, in this priority phase collaborations must be formed between the appropriate federal agencies, local municipalities, and community groups/NGOs- with Commonwealth agencies relegated to a subordinate role.
- Sewage systems, WWTPs and potable water systems: These disparate issues are lumped together since they all fall within the jurisdiction of the Commonwealth agency PRASA. Along with the factors listed in Section 3, I believe the biggest single problem here is that PRASA has simply been tasked with a job far too big. Regarding WWTPs, which are overwhelmingly designed for primary treatment only, we are faced with a long outmoded technology that does not scale up easily. Given that PRASA is currently being fined daily by the EPA for non-compliant WWTPs, and that the entire island is facing a severe economic crisis primarily caused by a systemic inability to administer funds effectively, merely throwing more money at this problem is not the preferred tactic- and it is highly unlikely that the billions of dollars necessary to upgrade according to the standard sewage treatment technology will ever be allocated, much less new facilities maintained. Here is a pressing need for out-of-the-box thinking, and a calculated risk on new approaches. SFR has available a suite of low-tech, low investment, low maintenance and easily scalable approaches to pre-treat sewage before it enters the WWTP (recirculating sand filters, green biofuel production, artificial wetlands etc) and is currently collaborating with research for potential new appropriate technology with various UPRM departments or NGOs. Post-WWTP will require artificial wetland treatment or (in very rare cases) natural wetland restoration. Obviously federal support and funding for continuing research, pilot projects, and initial implementation is vital to get these projects functioning- and I suggest those funds would be best administered by a federal/UPR/NGO/local community collaboration. The eventual aim would be to have all WWTPs run by a PRASA/community collaborative, and the most significant factor here is allowing the community access to PRASA

facilities and data. Obviously, I would suggest the Aguada WWTP as the site to develop this type of program, since all the required resources are already in place: research and engineering resources at UPRM; a functioning community based organization with much experience in water quality monitoring and pertinent techniques; and on-going research collaborations.

In a similar vein, it is completely unrealistic to expect the limited resources of PRASA to effectively monitor many hundreds of miles of sewage line and thousands of miles of principal potable water mains for anything but catastrophic failures. This is a case where self-funded community groups using the simplest and most affordable testing techniques can adequately perform such basic monitoring in their own interests, reserving the resources and expertise of PRASA for use where it is most needed: in comprehensive monitoring of potable water sources (wells, lakes and reservoirs) and filtration plants; WWTP performance and maintenance; and responding to reported failures and problems. Federal funding may be needed to set up such a community monitoring network, but it is expected the community itself will fund its continuing operation.

- Environmental and recreational waters: Again, with the Section 3 caveats, the basic problem is that the PREQB has been tasked with too much, and has not adapted their program to changing conditions. Of the hundreds of beaches in PR, the PREQB monitors 36 Class A Recreational Water locations (basically municipal public beaches) while in many cases, certainly in Rincón, the public beach is one of the less-used beaches by the community and tourists. Thus, a public health issue is not being effectively addressed from the outset. Environmental monitoring is extremely sporadic (if it happens at all), generally conducted by DNER or academic departments, and is hardly being addressed at all. This is what makes the SFR BWTF so unique and instructive- we are currently monitoring 20 sites per week (public beaches, popular beaches, the RMTP, and freshwater outflows) using the basically same equipment, protocols and methodology as the PREQB, plus engaging in our own research, plus collaborating with other entities on research, plus responding to community requests (mostly concerning freshwater or potable water)... for less than $1/10^{th}$ of the PREQB annual beach monitoring budget (and this also includes office overhead, and funding other chapter projects and activities), which we primarily generate with fundraising and community donations (aside from specific research grants). So when I suggest that with a federal grant of about 75% of the PREQB's annual beach monitoring budget several regional labs could be created, and within 2 years a community based network could be set up to conduct at least 500% more monitoring for about 30% of the PREQB's annual beach monitoring budget (which would become self-funding within 5 years), this is not an entirely unrealistic projection.

The example I like to use is the inclusion by the National Weather Service of 'spotters'- volunteers with minimal equipment but the training needed to make their reports accurate and reliable enough to allow the NWS to make predictions/issue warnings on a much smaller spatial or temporal basis than would otherwise be possible. In this present case we are facing a virtual information vacuum, so the data generated by such a network becomes, literally, valuable beyond any investment price.

NOTE: Although this proposal would eventually replace the PREQB beach monitoring program, it is NOT a recommendation to eliminate BEACH Act funding for PR! It is designed to perform what is well within the capacity of most communities to do, and allow the PREQB to devote its limited resources and expertise to areas where they would be most effective: more comprehensive monitoring/research in priority areas; the verification of reported problems; source tracking/identification and enforcement of remedial measures. But until such an alternative program is organized and implemented, and reliable funding secured to ensure coastal PR is being provided with (at least) the equivalent amount of reliable water quality information, the PREQB program needs to remain in place (if not expand). Even in the best-case scenario BEACH Act funding will need to be maintained to allow the PREQB to conduct verification testing and related partnership tasks. The 'downside' for the PREQB would be the requirement to regard such a community based network as

equal partners in a collaborative effort, and the sharing of facilities and data with the community. And this may very well be the biggest obstacle to implementing such a network, unfortunately.

Section 3: Interfacing with Commonwealth Government and Agencies

This is a fairly bleak situation I'm afraid, and I am sure that informally the USCRTF was told of the ubiquity of this issue- since the common understanding of any group operating in the environmental field in PR is that the single biggest obstacle to effective action is the involvement of the required regulatory agencies. This of course is not limited to environmental or public health agencies, but is true for every agency I have had to work with, and is equally true for the legislative arm from the municipal level to the Capitolio. Obviously this is not a situation unique to PR, but here we seem to have arrived at a 'perfect storm' of agency opacity, nepotism, cronyism, political patronage, and outright corruption (with a leavening of reactionary religious conservatism) that is a major factor in our current bankrupt state and general paralysis in beginning to deal with our own problems. In my experience what was formerly a bad situation has exponentially increased during the past 12-15 years as, due to mostly self-created 'economic shortfalls', younger employees (who are often enthusiastic, idealistic and committed) of the agencies are the first to be fired under the seniority system, and agency heads (some of whom are equally committed and sincere) are shuffled as political appointees. Thus virtually every Commonwealth agency is now top-heavy with mid and middle-upper level personnel who are, for the most part, middle aged, locked into a system of political and/or financial patronage, and generally regard their job not as a responsibility but as a sinecure. Inter-agency cooperation seems to have reached a new low, and intra-agency communication (never good) seems virtually non-existent. Hence the almost uniform reports that agencies are unable to respond effectively, totally uninterested in significant dialogue with the public (much less freely sharing data or any specific information beyond press releases) or cooperating with relevant NGOs, or acknowledging even the existence of systemic shortcomings aside from the perennial cry for even more money.
From my conversations with various USCRTF attendees I understand that even federal agencies and departments face this same great wall of opacity and silence when interfacing with Commonwealth agencies.

Obviously this is not an issue federal agencies can (or should) fix- it is our problem in PR and up to us as a people and electorate to do so. For the most part this will unfortunately involve simply waiting for the inert mass of public servants to retire, and younger and more enthusiastic personnel to hopefully get promoted into positions of responsibility. Equally obviously, as was repeatedly testified at the USCRTF meeting, there are grave and pressing problems that cannot wait for the longer term.

What can be done? Well, to borrow some wisdom from the construction trade- If you have a hammer with a badly cracked handle, you don't expect to do a lot of heavy hitting with it. You find (or make) another hammer.

RECOMMENDATIONS
As I have repeatedly mentioned, the only possible tactic realistically available to begin resolving issues concerning the USCRTF in Puerto Rico hinge on forming direct ties with community groups and NGOs/non-profits, relegating the badly-flawed Commonwealth agencies to secondary or supportive roles. This may in fact be the single most viable 'survival strategy' for a broad range of issues currently facing PR, however, to limit this response exclusively to topics of concern to the USCRTF:

- MPAs and other protected areas: Any currently planned or proposed new MPAs should be

mandated as being co-managed, with local community members forming the majority of the management board. While recognizing the appropriate Commonwealth agencies as the ultimate authoritive body (except in case of federally protected species protection and other similar cases) it should be understood from the outset that these agencies have only an equal voice at the board level, with no veto or extraordinary powers granted to, or assumed by, them. If the agency cannot convince the majority of the board of the validity of a course of action then it is, by definition, not valid or actionable. In the most hopeful scenario the successful co-management of natural resources may function as a formula or model for other unrelated agencies or authorities to form agency/consumer or agency/public interfaces, to the benefit of all parties. It is to be noted that that the PR DNER has already made great advances in this regard, and provides an available role model.

- Environmental, recreational, and potable water quality issues: Here there seems to be a pressing need for an independent 3rd party monitoring body outside of the usual governmental or agency authority, since the true extent of the problems seems unknown. As outlined in the third recommendation in Section 2, a community-based network of regional water quality labs could use the detection of enteroccocus bacteria as the current standard indicator species of bacterial contamination of both marine environmental and recreational waters, as well as an adequate if not comprehensive indicator of potable water quality, thus accomplishing more extensive monitoring of all three water quality issues for a fraction of the costs of existing and very limited monitoring efforts. Doubtless federal funding and assistance would be required during the initial phase of implementing this type of network. However, in a classic instance of technology transfer and local empowerment, as soon as practicable this network would be so designed to be self-funding, thus accomplishing three goals: insulating the program against fluctuations in federal funding levels; encouraging the regional labs to form significant partnerships with local communities, businesses and NGO/non-profits; the requirements of fundraising ensure the labs would continually promote and publicize their efforts, thus increasing public awareness of these issues and, perhaps, eventually inspiring other similar groups or networks to form to address other local or regional issues. It is to be hoped that once Commonwealth agencies are presented with an already functioning and efficient network, mere fiduciary wisdom would suggest they form a partnership. At the very least (since the PR public is not only the beneficiary but also the ultimate source of agency authority) the old adage would apply- a workman never works better than when he knows his boss is watching.
- New and/or appropriate technology development: This may seem like 'old news' and an already cut-and-dried topic for research funding- and after all, most current federal grants come with a community involvement stipulation. However, with some notable exceptions, most of academia seems to feel that particular stipulation is an annoying add-on to be dealt with under the fairly vague heading of education and outreach. Here in many cases I feel potentially valuable social resources are being neglected. I would like to suggest that specific federal funding be set aside for a period of time as seed-money financing for exclusively PR academic/community collaborations on topics within the USCRTF purview. The important aspect of this scenario is that the community is an equal partner with academia, helping to direct and inform research according to local knowledge and experience and (often) a better idea of where research is immediately needed or applicable. The potential benefits would be several: the community gets a chance to direct investigation towards areas of specific local concern; academic departments are encouraged to focus on off-campus beach-level projects; a large unused reservoir of creative ideas and talent existing in the community can be accessed, as well as a reserve of manpower not usually available to campuses; since academic departments are not immune to the problems already enumerated for Commonwealth agencies, funding via a collaborative neatly side-steps that issue; valuable projects that academia does not pursue due

to the difficulty of acquiring funding, and that the community does not pursue due to lack of expert advice and partnering would become feasible; field trials, prototype testing, and longer term followup studies would be easier with community involvement; invaluable experience would be provided to undergraduate (and higher) students being able to design, conduct and manage research efforts within a broader community context; for successful research projects, a fertile field would already have been created when the application phase arrives, since experienced academic/community teams would already exist familiar with all phases of the project- thus keeping startup times and costs to a minimum as these projects evolve into the private sector; not coincidentally, such projects could provide meaningful employment opportunities to talented graduate students in many fields for exercising their skills who are otherwise usually forced to emigrate from PR to find such opportunities.

APPROPRIATE RELEVANT KUDOS and GOOD NEWS: I would not want to paint a completely depressing picture of the current status of environmental protection efforts in PR, since this would be unfair to the many people and groups engaged in a valiant, and often unreported, struggle to protect valuable natural and environmental resources here. I would primarily like to note:

- The current Secretary of DNER Carmen Guerrero, for her untiring efforts to actually 'do her job' when faced with somewhat overwhelming odds. I particularly applaud her staunch insistence that all newly created natural protected areas be co-managed- this is a rare instance of an agency actually recognizing an existing problem and actively enforcing remediation efforts. She has always been in favor of and supported community involvement in such protection, and she provides an inspiring example of how agencies could (and should) be directed.
- It is only fair to note that since the adoption of the BAV in October, the PREQB (Junta de Calidad Ambiental) has actually improved their beach monitoring program quite a bit. There is now more frequent sampling, more rapid re-sampling of beaches with unacceptable bacteria levels, and at least an attempt to post the data in a more timely manner. Obviously I would like to encourage them to continue improving their program.
- The fairly recent requirement that at least multi-unit development projects have their septic systems properly inspected and certified. How well the inspection and enforcement efforts are applied remains to be be determined (especially on smaller scales) but it must be acknowledged that a serious problem has been officially recognized and corrective action has been initiated.
- I would especially point out there are dozens of small groups like SFR which are engaged in an often desperate effort to preserve and protect their local natural resources and environment, with minimal budget and virtually no media coverage. I am particularly appreciative of how well this network shares information and support, making these people the unsung heroes at the forefront of creating a new cooperative manner of protecting our island. Equally, I am very appreciative of the dozens of employees of various governmental entities who, trusting my discretion, are willing to talk with me informally and off-the-record about their concerns and problems they face during the course of their duties. They too must remain, sadly, unsung.

Concluding remark: It may seem I am recommending community involvement as some sort of panacea for many and various ills. Alas, after a virtual lifetime of being involved in community-based activities, I am unable to make that statement! Organizing community efforts is often messy, frequently frustrating, and continually stretches patience and people-skills. However, I can say that when communities organize for their own obvious self-interest and are able to direct their own efforts, far more often than not an effective and efficient action results. People as individuals are subject to

very much the same limitations as agencies, but in the collective sense those limitations tend to cancel each other out- very often with resulting efforts that far surpass what was envisioned by the original participants. Since it is brutally obvious that 'business as usual' is no longer a functional option for this island, and recognizing the systemic institutional inertia against effective change, our only remaining available resource is the community itself, as reluctant as government, agencies- and yes, in some cases the community itself- is to admit this.

Of course, I am only too happy to provide USCRTF members with any available supporting documentation and further information regarding any topics covered in these written comments, and I am grateful to the USCRTF for this opportunity - and their continuing work in this vital field.

Respectfully,

Steve Tamar