

## *Chapter 11*

# *Addressing the Hazards and Recommendations from the LGWR Ecological Assessment – Part I*



# *Update on Hazards and Previous Recommendations*

A number of hazards and risks were identified in Part I of the Ecological Assessment for the Refuge. In addition, several management recommendations were made. An update on the status of the associated recommendations is provided below.

## **- Soil Contamination and Erosion Recommendations** (p. 44 of the Ecological Assessment – Part I)

- ***Perform soil test to determine the extent of the contamination:*** As described above, soil testing has been done by Lehigh and by independent environmental firms as part of the NRDA.
- ***Test water resources within the Refuge:*** The water resources have also been tested through the various studies described above and in the macroinvertebrate studies described in Chapter 7.
- ***Determine whether any of the metals in the soil pose a risk of inhalation, ingestion or absorption by Refuge visitors:*** Based on risk assessment studies that have been completed, the EPA believes risk is below any threshold that would require procedures concerning visitors pursuing passive recreation. Even risk to workers is extremely low. Common sense procedures such as washing hands and removing mud from boots are all that are required for workers. Visitors are at far less risk than workers at the site. (Charlie Root, personal communication)
- ***Continue the process of establishing native warm-season grasses and other native meadow plants on exposed areas to stabilize soil resources*** – see Chapters 8 and 9.

## **- Hazards Recommendations** (p. 45)

- ***Secure or remove the block building near Lehigh Tunnel:*** This building was secured in 2009. It was filled in to ground level with soil and rocks. The tank is covered and no one can fall into the structure and be injured.
- ***Determine which structures have historical significance; remove if not historic or educational:*** The Tannery building has been temporarily stabilized and a significant amount of work has been done on the Osprey House. Additional renovations are planned. Other structures related to the former railroads have both historical significance to the site and educational value so they remain.
- ***Secure oil lamp reservoirs and storm water culverts:*** Oil lamps have been filled with rocks to prevent entry and culvert secured by stand-pipe.

- ***Remove/repair retaining walls:*** Most retaining walls are in good repair. The cribbing along LNE rail bed is in disrepair but removal could jeopardize stability of trail. This also has historic educational value. Warning signs (“Danger! Keep off”) have been installed.
- ***Remove old railroad ties and telephone poles:*** Most of the ties have been removed but most of the poles remain. Some of these used as posts for nest boxes and some are transect markers for various studies. At this point, they do not seem to pose any risk.
- ***Investigate what is under the concrete cap between Mallard and Kingfisher pond:*** This has not been done, but seems to pose no risk.

- **Native Grassland recommendations** (p.46)

- ***Educate the National Park Service about significance of ridge top grassland:*** The LGNC has done this and the NPS no longer plans to try to forest the area or build an access road.
- ***Explore land swaps with National Park Service and PA Game Commission to gain control of ridge top grassland for its perpetuation:*** This is no longer needed, since they no longer plan to destroy this area with a road
- ***Together with the Pennsylvania Game Commission, develop a grassland management program for the ridge top savanna:*** There has been no action on this to date; this should be a long-term goal.
- ***Design re-vegetation program on lower slopes to avoid interference with ridge-top grassland:*** To the extent possible, this was done. Collection of local ecotypes was impractical for the volume we needed but PA ecotypes were used whenever possible. The need for erosion control outweighed this concern, so commercially available seed was purchased to speed the re-vegetation process. A 100 foot buffer was left between any re-vegetation work and the savanna.

- **Invasive Plant Recommendations** (p. 50)

- ***Develop an invasive plant management plan*** – See Chapters 8 and 9; Arcadis staff members have developed a plan.<sup>1</sup>
- ***Focus initial control efforts within natural communities*** (e.g. in riparian area and wetlands): See Chapters 8 & 9; no specific funds have become available for invasive species management to date beyond those provided by CBS Operations under CERCLA. Invasive plant species are now also appearing in the grasslands, so

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<sup>1</sup> Lansing, J. and K. Romaine. 2007. Draft Invasive Plant Management Plan, Operable Unit 1, Geographic Area 2. Arcadis BBL, Albany, NY.

management options for this area of the Refuge must be discussed. To date, prescribed burns and mass grazing have been discussed with outside consultants. Discussions with the scientists from Fort Indiantown Gap about prescribed burns was discussed in Chapter 6 as it relates to habitat management for the Regal Fritillary and D. Kunkle has had discussions of mass grazing with Jerry Brunetti of Agri-Dynamics. With respect to the latter, it is unlikely that livestock owners would want their animals grazing on land contaminated with heavy metals, even if the toxicity risk is determined to be low.

- ***Address invasives along old rail beds:*** This has been done by the LGNC interns and will continue to be monitored.

- **White-tailed deer recommendations** (p. 52)

- ***Undertake a monitoring program:*** This is being done through the grassland enhancement/deer exclosure study and through a pilot mammal survey that includes trail cameras.
- ***Develop a deer management program:*** This will be developed after results are in from the monitoring studies.
- ***Start a research and education program concerning deer, including demonstration deer exclosures:*** The exclosures have been installed and the research is being conducted. There is informational signage at the exclosure site, but additional public programming could be developed since deer management is a state-wide issue.

- **Trash and Debris recommendations** (p. 53)

- ***Clean up scattered trash:*** This has been done and but is an ongoing process. Signs indicate that the Refuge is a trash-free park.
- ***Remove non-organic debris from dump:*** This is along LNE Trail near the Three-ponds Trail sign; plans are to cover this with fill, since removal would be difficult and expensive.
- ***Organize clean-up days:*** These occur twice annually in March and August. Numerous LGNC volunteers participate in the events.

- **Graffiti recommendations** (p. 54)

- ***Remove graffiti with environmentally safe cleaners:*** These were tried, but did not work. Volunteers and interns tried chipping the graffiti off with hammers. The LGNC resorted to painting over the most visible or any new graffiti and are allowing the old graffiti to remain for now.

- **Monitor and address new events:** See previous comment.

**- Property boundary recommendations (p. 54)**

- **Confirm property boundaries and survey and post as needed:** No surveys have been needed because most boundaries are with other government agency lands and those with private landowners are not in dispute. If any disputes arise, surveys can be done, but the cost is prohibitive if there is no question of ownership. Posting has been completed where needed, however needs to be monitored and re-posted as necessary. Posting is not needed between boundaries with the Pennsylvania Game Commission and National Park Service properties, Lehigh County, or East Penn Township.
- **Investigate acquisition potential for in-holding at ponds:** The owner is not willing to sell at this time. He did offer sale of the property and we began fundraising, however, he changed his mind, refused to sell, and we forfeited the grant we had obtained to help with the purchase. The LGNC is looking at other potential properties, but funding for land acquisition is a problem.

**- Railroad Bed Recommendations (p. 55)**

- **Engage a structural engineer to provide the maintenance and capital replacement estimates for the support and drainage structures associated with the railroad beds:** Several grant requests concerning this have been rejected. Interns have built erosion control structures with rocks from the site that have stabilized the bed.
- **Develop a maintenance schedule and capital replacement strategy:** See comment above.
- **Determine historical or educational significance of remaining railroad structures:** The LGNC believes that the remaining structures have both historical and educational value for the site.

**- Secondary Education Recommendations (p. 56)**

- **Inform local school districts of the Refuge and its educational opportunities:** Educational programming is a strength of the LGNC, not just for secondary education levels but for K-12 students, undergraduate students and graduate students. As noted in the Introduction, over 2000 students were served during the 2009-2010 school year in LGNC educational programs. Students from nine different colleges participated in class trips, presentations, or research opportunities at the LGWR property. Special programs for high school students like the Service Learning in Public Policy program are using the Refuge. With the construction of the new Visitors' Center and Education Building and the addition of educational signage, even more opportunities are available.

- ***Recruit and maintain contact with interested teachers in those districts:*** For the past four years, LGNC and Moravian College have collaborated to provide Act 48 in-service training for teachers from Northampton, Lehigh and Carbon Counties. These workshops are designed to not only provide opportunities for K-12 teachers to learn about ecology, environmental science and natural history, but also to encourage them to use the Refuge as an outdoor classroom. A small, but regular, core of teachers from private and public schools have repeatedly participated and incorporated ideas into their curriculum – many of which have direct ties to the Refuge and the story of the Superfund site and restoration project. In addition, LGNC staff has worked with more than 20 teachers from various surrounding districts to design custom field trips to meet the needs of their students.

- **University Research and Education Recommendations** (p. 57)

- ***Continue established research and education programs with local colleges and universities:*** As should be evident from this assessment, this has occurred. Over the past six years, LGNC has provided paid internships in ecology and wildlife research for 18 students and many students and faculty have participated in research at the Refuge as described in this report (see Appendix A). A second Research Roundtable was convened in 2009 and the list of participating institutions has expanded since Part I of the assessment was written.
- ***Inform other regional colleges and universities of the research and educational opportunities of the Refuge:*** See above. The restoration work has received state and national recognition, so that there have been visitors, including researchers, from other states and even from other countries. A number of presentations have also been made at academic institutions, scientific conferences at the regional, national and international level.
- ***Maintain contact with interested faculty:*** This has been done through the Research Roundtable, ongoing communication with the researchers with ongoing projects at the Refuge, and related meetings about regional watersheds and conservation initiatives.

- **Walking Trail Recommendations** (p. 58)

- ***Monitor trails regularly:*** This is done.
- ***Work with the D & L National Heritage Corridor to restore railroad bed as a walking and biking trail:*** This is done in the Lehigh County section and the LGNC and D & L have been working with East Penn Township to finish the improvements in the section of the trail in Carbon County. The entire trail bordering Lehigh Gap Wildlife Refuge is scheduled to be completed by June 2011.
- ***Determine if any species of concern are affected by existing trails:*** To our

knowledge this is not a problem. But, as noted earlier in the report, increased use of the Refuge for passive recreation could create problems in the future. Routine monitoring and trail work is done by volunteers from the Allentown Hiking Club and LGNC.

- Minimize future trails to minimize adverse effects on wildlife and sensitive plant species:** The location of trails has been carefully thought out. Descriptions and the new trail map are available at the LGNC website: <http://lgnc.org/maps-directions/trail-maps>. The trail map is also shown below. The LGNC mission includes both conservation and recreation with public education about nature, the restoration project, the history of the region, and conservation being integrated in to both activities. It is not desirable to exclude people from the site; there is too much to see and learn about. Thus, we must include education about stewardship and diligently monitor areas that get a lot of use.



**- River Access Recommendations (p. 59)**

- Engage township, D & L National Heritage Corridor and user groups to help monitor areas for unwarranted use.** See below.
- Monitor access to prevent environmental degradation; move or improve access points as needed.** The LGNC has worked with a number of partners, most notably the townships on the issue of river access. As shown on the trail map on the previous page, two boat launches—one on either side of the Refuge—have been

built. The one downstream of the Refuge on the former Pfizer property was completed in fall 2010. It is believed that these are assets to the Refuge and may decrease use of the canoe and kayak launch site on the Refuge property. Many of the visitors to the LGWR arrive by water and routinely stop to ask volunteers about the site, including the gardens. This provides yet another way to educate people about the LGNC projects.

- **Hawk Watching Recommendations** (p. 60)

- ***Determine the extent of hawk watching preferred on the Refuge:*** The best vantage points for observing raptor migrations are at the top of the Kittatinny Ridge which is a significant (but enjoyable) hike from the LGWR parking area. It is easier to access good raptor viewing sites at Bake Oven Knob. The LGNC just celebrated the 50<sup>th</sup> year of the Bake Oven Knob Hawk Watch. The annual Hawk Fest has been expanded to a migration festival that takes place at both the Refuge and Bake Oven Knob (BOK). For study and educational purposes, BOK remains the better site, although monitoring of kestrel populations and breeding is being monitored at the Refuge. Raptors, including bald eagles and ospreys are seen flying over the Lehigh River from the railroad bed trails and from the grasslands of LGWR; these are exciting surprises to LGNC visitors who are often only (at best) casually interested in birds.
- ***Explore collaborative research with Pennsylvania Audubon and Hawk Mountain Sanctuary:*** The LGNC is partnering with these organizations due to a common interest in bird and bird habitat conservation. Recently, LGNC has initiated a new multi-organization partnership (including Pennsylvania Audubon) focused on conservation of the Kittatinny Ridge and a phenology (as citizen science) project.