Multi-disciplined approach to planning and constructing is essential

By A. John Harvey

Today's golf course developer can face a seemingly endless approval process, which begins with finding a site that has the right physical attributes. The best parcels of land on which to lay out a golf course include diverse topography and vegetative cover, and on these lands, one usually finds an array of soil types, watercourses, surface waters and wetlands. In these times of environmental awareness, the desire for a great site that is aware of the game and the architect's objectives for certain impacts, the designer is more likely to find that his/her plan moves forward in the regulatory process. However, as can often occur, when the designer feels modifications cannot be made without significantly jeopardizing the quality of the course, the team must recognize the need to provide additional justification for the proposed impacts. Wetland impacts are strictly defined as grading or filling. This is where a portion of the proposed course requires excavation or filling of existing wetlands to meet the needs and dynamics of golf hole design. Often, a layout proposes filling slivers or fringes of wetlands. Rarely is it necessary to completely fill or excavate large segments of these resources.

Other potential wetland impacts need to be evaluated, including tree canopy removal, flooding and habitat conversion. Tree canopy removal is achieved by hand or by the use of herbicides such as Bensumec. This is where a portion of the wetland is isolated from the rest of the wetland system, isolating non-wetland land forms into irregular sizes and shapes. Therefore, strict avoidance is not always an option.

The irony is, the best land for golf course design is often riddled with bureaucratic red tape. In the most heavily regulated locales, and in extreme cases, a given site can have wetlands jurisdictions based on various criteria such as vegetation, soils, hydrology and habitat, leaving a site with as many as three distinct wetland delineations. If the site includes enough acreage, and its natural features are environmentally sensitive, the easiest way to work with wetlands is to avoid them. This is the "Party Line" of the regulatory agencies. However, the natural landscape is comprised of an infinite number, arrangement and complexity of wetland configurations. Much of the earth's landscape is compartmentalized by wetland systems, isolating non-wetland land forms into irregular sizes and shapes. Therefore, strict avoidance is not always an option.

The golf course architect's mission is to route the best layout with the fewest impacts possible. Where the plan comes into conflict with regulated areas and avoidance is not entirely feasible, the project design team becomes complex in the effort to meet the project's goals and objectives while standing on an environmentally sound premise. Such a team must include the golf course architect, along with a civil engineer, surveyor, ecologist, archaeologist, hydrologist and turfgrass scientist, all of whom must wrestle with the site plan to get the best golf course given the site's constraints.

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Harvey on teams

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gotated height, in order for the
golf hole to offer the player an
unrestricted line of sight from one
side of a wetland corridor to
target on the other side. This is
called a "play-over" or "forced-
carry". The height of vegetation
to remain is based on the topog-
ography within the wetland floor and
the shot required to and from
the surrounding up-land golf
area. These areas require a pro-
gram of ongoing maintenance
by the superintendent and eco-
logical consultant to ensure fu-
ture playability of golf holes
while maintaining wetland qual-
ity. Flooding of a wetland means
exactly that, raising the water el-
evation, to create or enhance a
water hazard or irrigation pond.
Habitat conversion means alter-
ing an existing wetland from one
type to another. For example, dig-
ging out a portion of a marsh to
create open water or cutting trees
from a forested wetland to make a
shrub swamp for play-over.

The process of negotiating
these activities can be costly and
time consuming for the developer,
sometimes taking several years.
If the project requires wetland
impacts, it will be necessary for
the development team to perform
an alternative site analysis. This is
a study of similar parcels of land,
on the market or privately held,
within the project vicinity which
meet the program criteria of the
project. This can be an exhaustive
task that identifies whether these
tracts of land can serve as the site
for the course. Often they can be
eliminated one by one, but on rare
occasions, they qualify.

When the regulators eventu-
ally agree on the proposed site
golf course layout as sup-
ported by scientific, golf and ar-
tistic documentation, then on-
ly mitigation for environmental
impacts is the measure used to
compensate for alteration of
the site's existing wetlands. This
is the last resort offered by envi-
ronmental law. Many states have
a mitigation ratio for various types
of wetland impacts, such as grading, filling,
tree canopy removal, flooding
and conversion.

Building mitigation areas must
dovetail with the site's
earthwork and the phasing of
the project, in order to be properly
built and adapted to the site's
sub-strate, local hydrology and golf.
The ecological consultant is the
key team player in producing de-
tailed construction and planting
plans to create a wetland.

Equally important is the site's
earthwork and shaping
contractor's experience in not
only moving earth and shaping
golf courses, but also construct-
ing wetland mitigation systems.
Once the project is completed
and fully grown in, the mitiga-
tion areas must be surveyed and
investigated to ensure compliance
with the permit conditions that
require fully functioning and suc-
cessful wetlands. The ecological
consultant and permit authorities
closely monitor this work.

The transition areas between
wetlands and open-water areas
are strictly regulated, with juris-
dictional setbacks that can ex-
tend inland from 25 to 200 feet,
representing additional planning
obstacles. These buffers vary
from state to state and wetlands
to wetlands, depending upon the
resource value of the particular
ecological system. For example,
tout streams typically have wide
buffers attached to their corri-
dors. When a golf course layout
may affect the habitat that sup-
ports a protected species it is
necessary to prove to the agen-
cies why tree clearing and grad-
ing within these buffers is re-
quired to meet the playability
demands of the golf course.

Wildlife habitats that are truly
sensitive are quickly becoming
a tricky regulatory issue in site
planning because the resource
is difficult to quantify and qualify
during the site inventory, re-
search and documentation
phase. This, and wetlands,
issues will be two of the most diffi-
cult tasks facing government, the
scientific community, and the de-
veloper in years to come.

In order for the developer to
receive permission to commence
construction of a golf course on
an attractive, yet sensitive site,
he or she must assemble a highly
qualified, multi-disciplined con-
sulting team that can assist the
golf course architect in produc-
ing well conceived and scientifi-
cally supported plans. This can
be an expensive and time con-
suming process, but it is essen-
tial for successfully planning
and building a golf course in today's
environmentally aware society.

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