

## **Resource Analysis and Scientific Services Division 2019 Annual Report**

The Resource Analysis and Scientific Services (RASS) Division of the Adirondack Park Agency is responsible for providing scientific and engineering assistance to Agency staff. All Agency transactions that involve wetlands, soils, wastewater treatment, invasive species, stormwater, surface water and/or forests are analyzed by RASS in protection of natural resources.

RASS staff act as the interface between Agency Divisions and with project sponsors. During site visits, RASS staff provide technical direction and guidance to applicants on a wide range of issues to avoid adverse environmental impacts. Staff also provide wetland determinations and field delineations to landowners, an integral step for the planning and design of projects.

RASS staff also provide technical evaluations on enforcement cases, jurisdictional determinations, variances, and policies. Using the appropriate statutory and regulatory criteria, among other issues, staff's review includes analysis of soils, slopes, ground and surface water quality, fish and wildlife, wetlands, drainage and runoff patterns, topography, hydrology, adjoining and nearby land uses, adequacy of site facilities, forest resources, open space resources, and ability of government to provide facilities and services.

### **Administration**

RASS experienced several staff changes in 2019. Mark Rooks retired in February after almost 20 years at the Agency. Mary O'Dell was promoted to Biologist 2. Kelly McKean was hired as Biologist 1, as a transfer from NYSDEC Region 3 where she had been reviewing permit applications for adherence to state regulations and delineating wetlands.

Sam Boese was hired as Assistant Engineer. Sam transferred from NYSDOT Region 3 where he was an inspector of multiple construction projects and an assistant design engineer.

RASS staff have been involved with several permit application discussions, including the development of an application for solar generating facilities, a new General Permit for the replacement of utility poles, a revised Minor Permit Application and permit template modifications. Staff are also participating in the Agency's Variance work session which previously developed new variance applications based on the type of variance required. Discussions are on-going to make further improvements.

RASS staff participated and completed strategic planning improvements associated with permit applications and process. Improvements include a mechanism to conduct site visits early in the process and issuing shorter permits while maintaining a complete environmental review. RASS staff are working with Planning and Administrative staff to develop public water and sewer mapping and assessing the feasibility of alternative community wastewater treatment systems for the Park.

Staff are reviewing existing General Permits (GPs) for wetland projects to determine if updates or modifications need to be made. Staff have sent certain GP holders letters reminding them of the need to submit annual reports, as per permit compliance conditions.

Flyers for use by the public, including hand harvesting of nuisance aquatic plants, consulting services and list of native species for landscaping have been updated. Staff have also updated the internal staff Guidance documents on when to consult with RASS, small scale dredging projects, and the evaluation of existing on-site wastewater treatment systems. Modifications have been made to the Agency Web page to make it more user friendly and to incorporate the revised documents.

The Park Ecology Committee hosted numerous speakers at the Agency meetings including:

- Dr's Curt Stager, Celia Evans, and Lee Ann Sporn, Paul Smiths College professors from the Natural Science Department presenting on "Climate Change in the Adirondacks: Predictions, evidence, and monitoring for changes that can impact local communities and ecosystems."
- Chris Navitsky from the Lake George Waterkeeper presenting "Lake George's road salt reduction program, a model for protection."
- APPIP "Celebrating 20 years of protecting the Adirondacks from Invasive Species; Progress Report, New Challenges, and Potential Solutions."
- Leigh Walrath and Erin Vennie-Vollrath presenting the Aquatic Invasive Species (AIS) Management Tracker Program.
- Dr. Eric Holmlund presenting an update on the Adirondack Watershed Institute (AWI) Program.
- Jen Kretser colleagues and students presenting on the Community Climate Action program.
- Suzanne Treyger, the Forest Program Manager for Audubon NY, on their efforts to engage forest owners and foresters to improve habitat for priority birds in the State.
- Mark Lowery of the NYSDEC Office of Climate Change on the enacted Climate Leadership and Community Protection Act.

## Engineering

Evaluating existing and proposed development within the Park requires professional engineering services and technical analysis. This analysis is based upon sound science and engineering judgment in accordance with applicable laws, regulations, standards, policies and guidance documents.

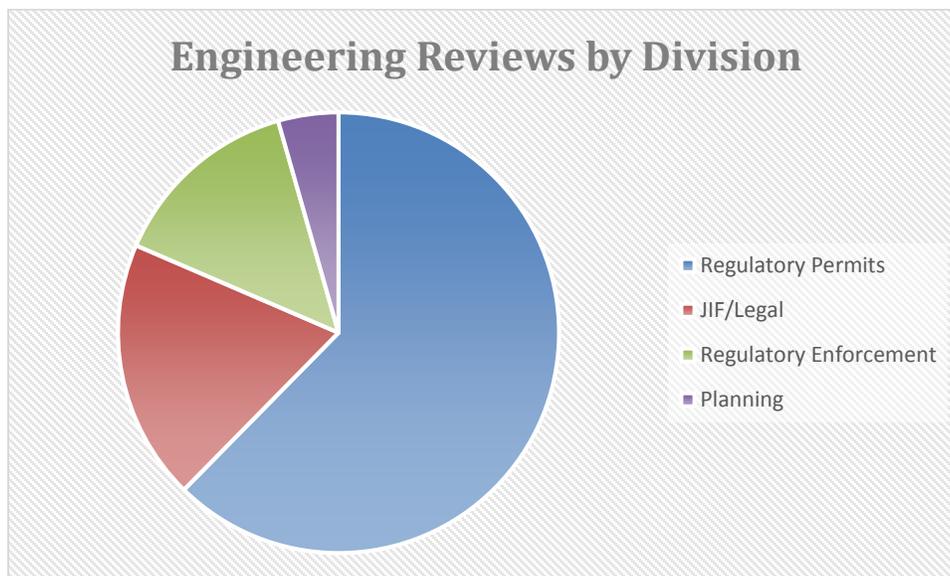
RASS engineering staff routinely conduct site visits, evaluate professionally prepared plans and designs, and provide technical comments and design recommendations. Engineering evaluations include, but are not limited to, on-site wastewater treatment systems, design of dams, bridges and roads, stormwater management, erosion and sediment control, mineral extraction, traffic and noise studies, and adequacy of municipal infrastructure services.

To provide an overview of how engineering services are utilized at the Agency and the amount of time spent on some of the more common review areas, RASS staff track the number of engineering reviews by category and by Agency Division. Engineering staff completed 155 site visits in 2019, compared to 128 site visits in 2018; 119 site visits in 2017, and 122 site visits in 2016.

In 2019 RASS Engineering staff provided written technical recommendations by Division as follows (see Figure 1):

- Regulatory Permit Applications – 522
- Regulatory Enforcement – 118
- Legal (Jurisdictional Office, legal reviews) – 160
- Planning (Local Government/Map Amendments/State Land) – 37

**Figure 1:** Engineering Reviews by Agency Division (2019)



Engineering staff also organized reviews by category as shown in Table 1 and Figure 2. The following is a description of categories reviewed by Agency engineers:

**On-Site Wastewater Treatment Systems (OSWTS)** - Evaluation of OSWTS design prepared by a New York State Licensed Professional Engineer utilizing site soils and slopes information for compliance with applicable laws, regulations, standards and policies for protection of health and water resources.

**Stormwater Management** - Evaluation of plans prepared by a qualified professional for compliance with applicable laws, regulations, standards and policies. The goal is to prevent surface and groundwater impacts from stormwater runoff associated with development proposals. Potential impacts from untreated stormwater runoff include a decline in surface water quality, diminished groundwater recharge and quality, stream channel erosion, habitat degradation, increased overbank flooding, floodplain expansion and impacts to aquatic organisms.

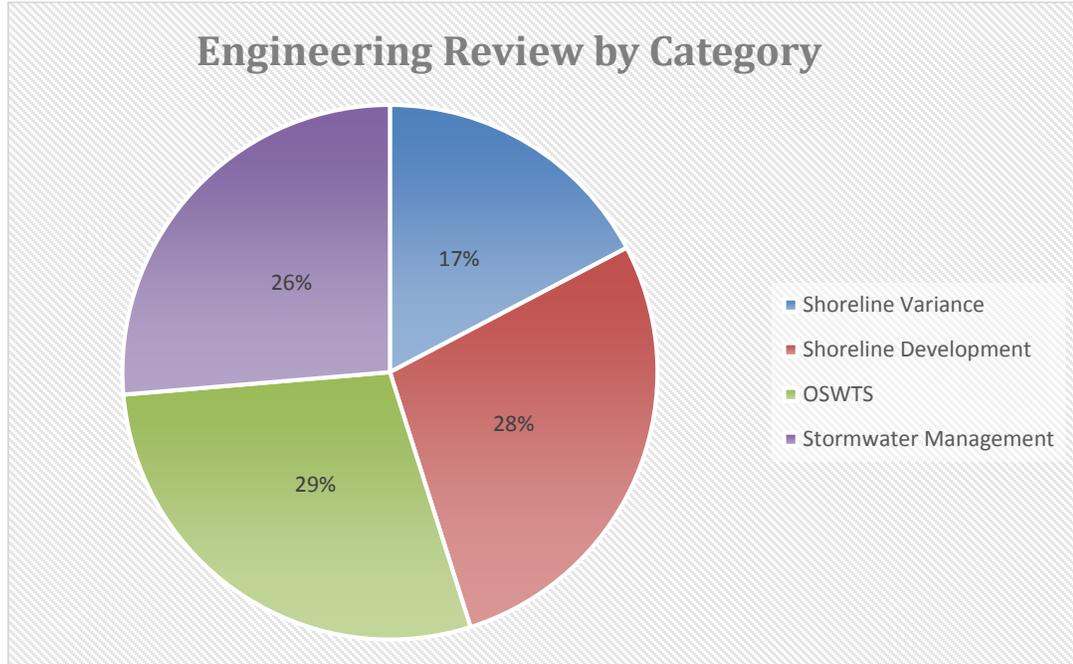
**Shoreline Development** – Technical reviews include a broad spectrum of programs including projects, variances, jurisdictional determinations, State land and enforcement cases. Typical engineering evaluations include both in office plan review and site visits for structures such as new and expanded single family dwelling construction, retaining walls, boathouses, docks, boardwalks, decks and other accessory structures.

**Shoreline Variance Proposals** - Reviews include proposals submitted which require variances, enforcement or jurisdictional determinations.

**Table 1:** Engineering Reviews by Category

On-Site Wastewater Treatment System (OSWTS) Reviews	325
Stormwater Management	300
Shoreline Development	317
Shoreline Variance Proposals	197

**Figure 2: Engineering Reviews by Category (2019)**



### **Soils**

RASS soils staff provide an essential service to the public and Agency engineers with soil test pit analysis for On-Site Wastewater Treatment System (OSWTS) design. This work is vital for efficient review of submitted OSWTS designs and is one of the key factors for identifying areas suitable for development.

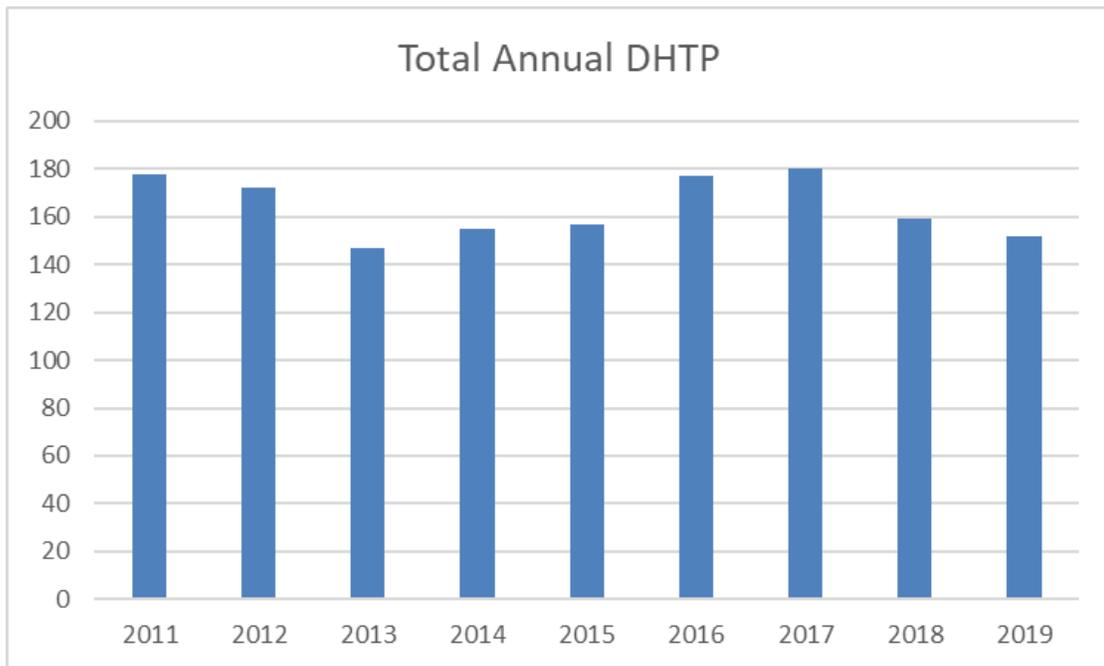
In 2019 a total of 91 projects involving 152 deep-hole test pits (DHTPs) were reviewed by Agency staff (Table 2). The number of DHTPs decreased slightly in 2019 as compared to 2018 (Figure 3). Of the 152 DHTPs, 128 were described by Agency soils staff and 24 were described by outside consultants. All data submitted by consultants is checked by Agency soils staff to ensure soil profile accuracy, separation requirements, and appropriate setback distances. In 2019, 35 percent of the test pits were accepted in support of conventional standard absorption OSWTS; 44 percent were accepted for conventional shallow absorption, and 20 percent did not meet Agency guidelines (Figure 4).

Of the test pits indicating the need for conventional shallow absorption systems, 90 percent were due to the presence of shallow seasonal high groundwater and 10 percent were due to the presence of shallow bedrock.

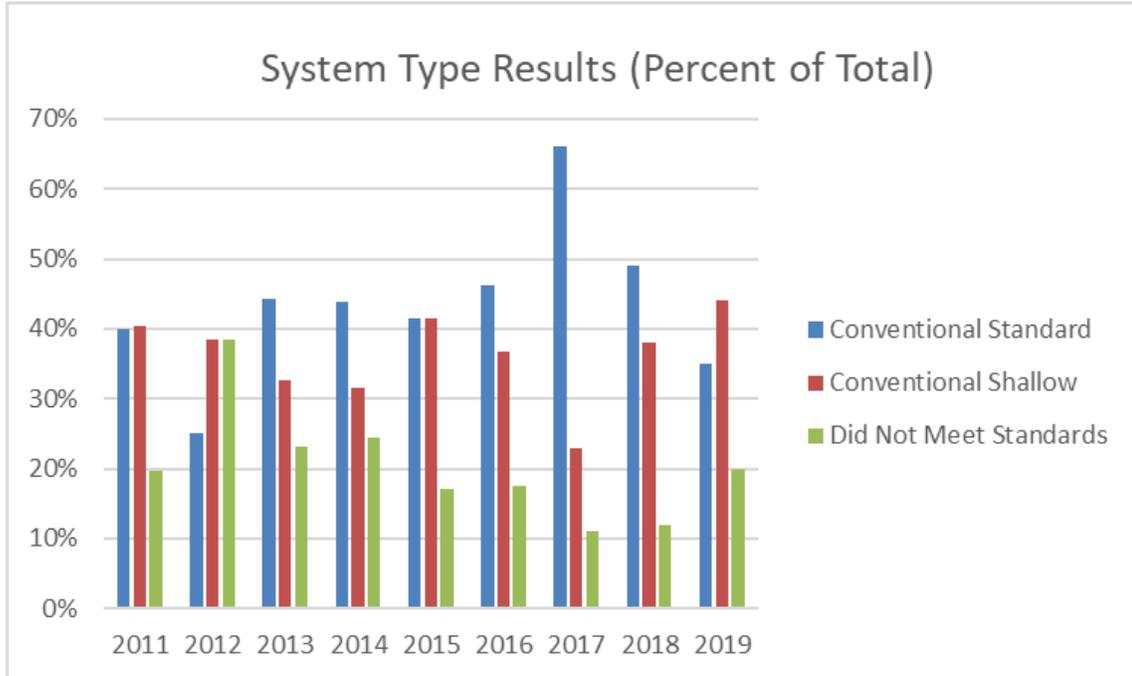
**Table 2: Deep-Hole Test Pit statistics for 2019**

2019 Deep Hole Test Pits	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
<b>Projects Involving DHTPs</b>	<b>7</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>10</b>	<b>12</b>	<b>10</b>	<b>6</b>	<b>16</b>	<b>10</b>	<b>7</b>	<b>4</b>	<b>91</b>
DHTPs Described by APA	9	3	1	5	13	28	22	9	18	13	4	3	128
DHTPs Described by Consultants	0	2	1	1	1	4	2	2	2	1	5	3	24
<b>Total DHTPs</b>	<b>9</b>	<b>5</b>	<b>2</b>	<b>6</b>	<b>14</b>	<b>32</b>	<b>24</b>	<b>11</b>	<b>20</b>	<b>14</b>	<b>9</b>	<b>6</b>	<b>152</b>
Approved Conventional Systems	3	4	1	1	4	9	10	5	7	5	2	2	53
Approved Shallow Systems	3	0	1	4	6	11	12	5	10	8	4	3	67
Did not Meet Agency Guidelines	3	1	0	0	3	12	2	1	3	1	3	1	30
Approved Conventional Systems %	33%	80%	50%	17%	29%	28%	42%	45%	35%	36%	22%	33%	35%
Approved Shallow Systems %	33%	0%	50%	67%	43%	34%	50%	45%	50%	57%	44%	50%	44%
Did not Meet Agency Guidelines %	33%	20%	0%	0%	21%	38%	8%	9%	15%	7%	33%	17%	20%
Approved Shallow Systems	3	0	1	4	6	11	12	5	10	8	4	3	67
Shallow Systems due to SHGWT	3	0	1	4	6	11	12	5	7	6	4	1	60
Shallow Systems due to Bedrock	0	0	0	0	0	0	0	0	3	2	0	2	7
Shallow Systems due to SHGWT %	100%	0%	100%	100%	100%	100%	100%	100%	70%	75%	100%	33%	90%
Shallow Systems due to Bedrock %	0%	0%	0%	0%	0%	0%	0%	0%	30%	25%	0%	67%	10%

**Figure 3: Deep-Hole Test Pits (DHTP) reviewed by APA staff (2011-2019)**



**Figure 4: Test Pit Results by System Type (2011- 2019)**

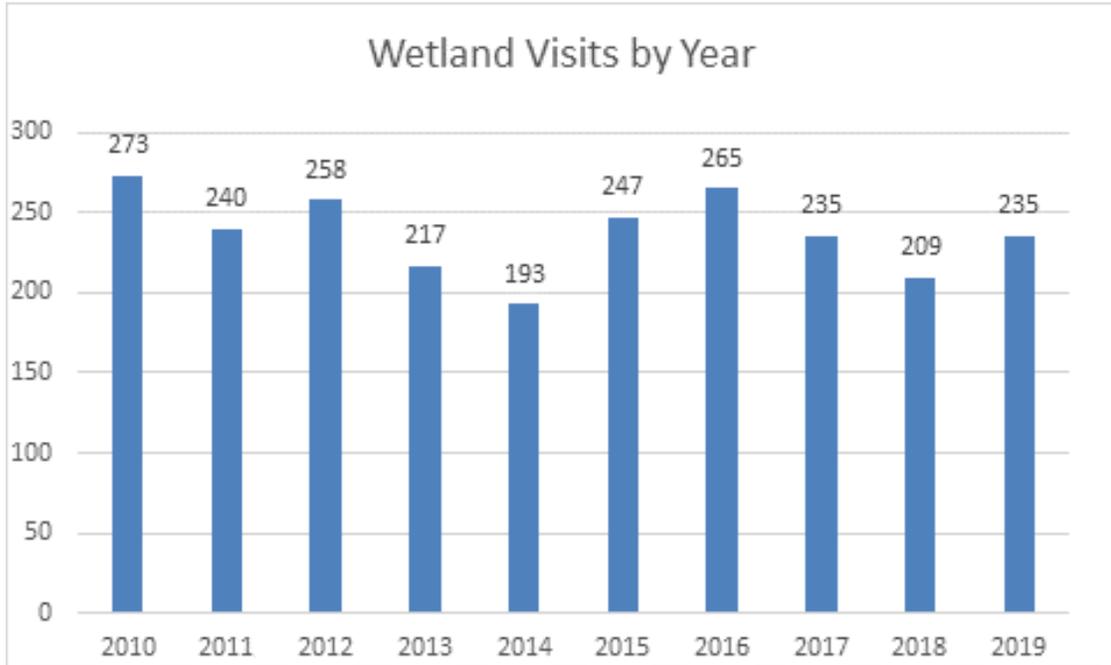


### **Wetlands**

Wetland involvement is a common jurisdictional trigger. The NYS Freshwater Wetlands Act and the APA Act have stringent requirements for regulated activities involving wetlands. The Agency’s wetlands protection program includes mapping, delineation, evaluation, mitigation, and impact analysis. Our wetlands program is proactive, responsive to public needs, and technologically advanced.

During 2019 a total of 235 wetland visits were made throughout the Park (Figure 5). This represents a slight increase from 2018 which had 209 site visits. Each site visit involved a wetland determination and/or delineation. Staff typically share information with applicants on the significance of wetland ecosystems so that landowners better understand the regulations. Some wetland delineations, due to wetland size, can take several days to complete. The average processing time for these 235 site visits, which is the amount of time it takes between receiving an application and conducting a site visit, was 17 days in 2019 (Table 3).

**Figure 5: Wetland Visits by Year (2010-2019)**



**Table 3: 2019 Wetland Field Visits**

Total wetland site visits by month and average processing time for wetland site visits.

Time Period	Number of requests received during month	Number completed	Interval for processing. (Date received to date scheduled for those received in that month)	Number pending
January	0	0	N/A	0
February	0	0	N/A	0
March	5	0	N/A	5
April	35	0	30	40
May	24	36	30	28
June	32	31	23	29
July	36	40	21	25
August	35	44	19	16
September	22	23	13	15

October	42	44	11	13
November	2	15	3	0
December	2	2	4	0
<b>Cumulative for 2019</b>	<b>235</b>	<b>235</b>	<b>Average =17</b>	<b>0</b>

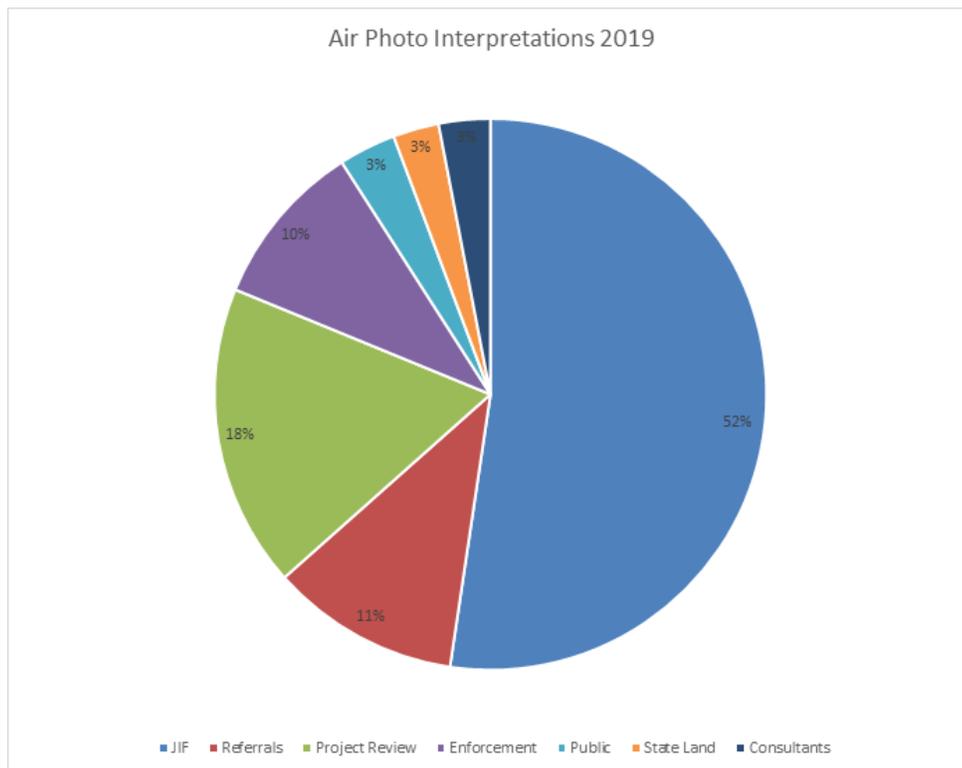
### Remote Sensing

RASS wetlands staff conducted 298 wetland air photo interpretations in 2019, mostly in support of other Agency divisions as summarized in Table 4 and depicted in Figure 6. Air photo interpretations are conducted with high-resolution digital stereo pairs of aerial photographs viewed with state-of-the-art hardware and software. This equipment allows staff to respond to requests for wetland determinations in a timely manner and reduces the need for field visits. The number of air photo interpretations decreased in 2019 as depicted in Figure 7.

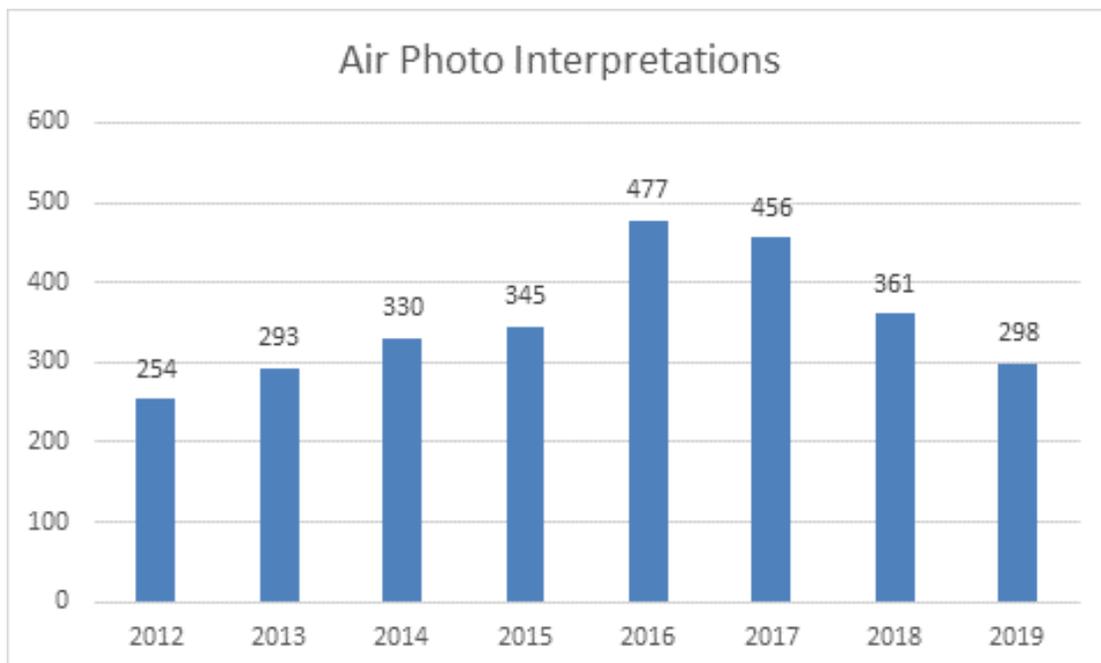
**Table 4:** Air Photo Interpretations by Request

	JIF	Referrals	Project Review	Enforcement	Public	Other Staff	Other	Total
Jan.	13	2	12	1	1	2	1	32
Feb.	19	0	4	1	1	1	2	28
March	15	2	2	2	3	1	0	25
April	16	2	2	3	3	1	2	29
May	12	3	3	1	1	1	0	21
June	9	2	0	2	0	1	2	16
July	15	0	5	3	0	0	1	24
August	12	0	5	5	0	0	0	22
Sept.	9	8	3	2	0	0	1	23
Oct.	9	3	5	3	1	1	0	22
Nov.	12	5	4	3	0	0	0	24
Dec.	15	6	8	3	0	0	0	32
<b>Total</b>	<b>156</b>	<b>33</b>	<b>53</b>	<b>29</b>	<b>10</b>	<b>8</b>	<b>9</b>	<b>298</b>

**Figure 6: Air Photo Interpretations by Request**



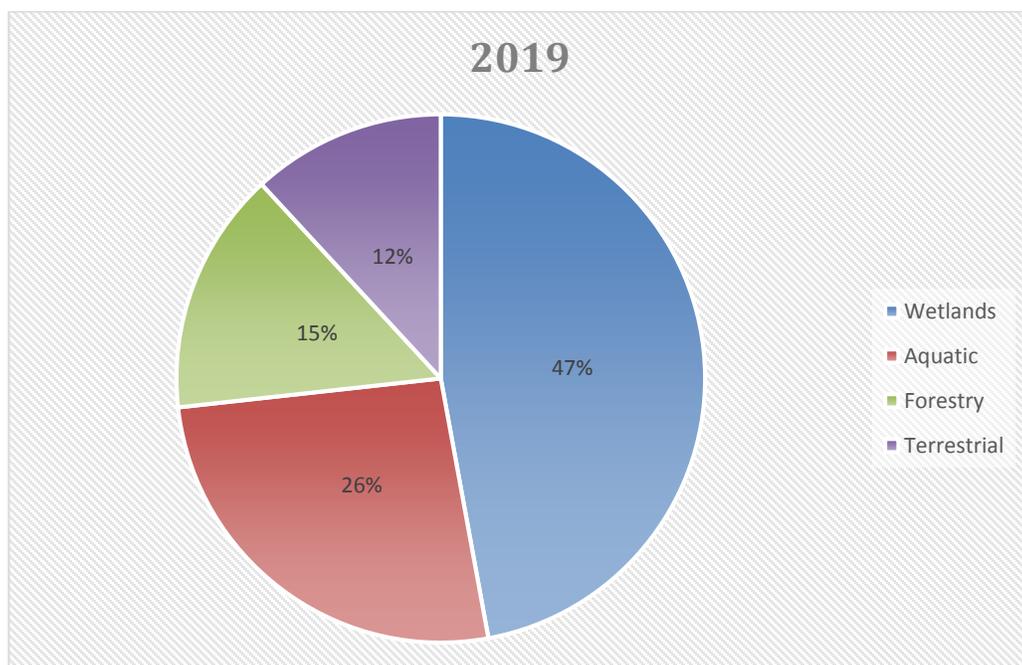
**Figure 7: Air Photo Interpretations by Year (2012-2019)**



## Biological, Freshwater and Forestry Resources

RASS ecologists and forestry specialists track the number of wetland, aquatic, terrestrial, and forestry related reviews by categories. This tracking provides an overview of time spent on these more common categories and provides an overview of how wetland biologists, freshwater ecologist and forestry specialist services are utilized at the Agency. As depicted in Figure 8, wetland related project reviews accounted for approximately 47 percent of the reviews. Freshwater resource related projects, mostly attributed to aquatic invasive species management, represented 26 percent of the reviews. Forestry related reviews accounted for 15 percent by category.

**Figure 8:** Wetland, Aquatic, Terrestrial and Forestry Projects



## Freshwater Resources

In 2019 Agency staff worked with Adirondack Park Invasive Plant Program's (APIPP) Terrestrial Invasives Project Coordinator to assess the utility of unmanned aerial vehicles (drones) for mapping floating-leaf and deep-water marshes. Staff also assisted APIPP in the training of lake volunteers in advancement of the citizen scientist-based Lake Management Tracker tool which was jointly developed by APA staff and APIPP in 2018. Staff attended conferences organized by the Adirondack Lakes Alliance, the New York State Federation of Lake Associations, and the North American Invasive Species Management Association, where the Lake Management Tracker tool was presented. Staff also provided public outreach and guidance to local lake associations, the Adirondack Lakes Alliance, and at Paul Smiths College's annual Lake Steward training. The Freshwater Analyst also served on the Adirondack Aquatic Invasive Species Advisory

Committee, and various committees for the Lake Champlain Basin Program and the Lake Champlain Sea Grant.

In addition to assisting other Agency staff with the issuance of jurisdictional determinations and the review of projects subject to regulatory review, the Freshwater Analyst also assumed regulatory review responsibilities for dredging, lake liming, and non-native and invasive species management projects.

## **Forests**

The forests of the Adirondacks are integral to the character of the Park, creating a living landscape that provides wildlife habitat, biodiversity, purification of water resources, and economic and recreational opportunities. Forests on State lands, in many cases having been preserved from logging for more than a century, are characterized by steadily maturing stands, while many privately-owned forests are managed for timber resulting in younger, early succession forests. This age diversity comprises a mosaic of habitats supporting a diverse variety of flora and fauna.

Ongoing human disturbance, including invasive pests and pathogens, climate disruption, acidic deposition and poor forest management, pose a threat of significant impairment to our forests. Agency practices encourage sustainable forest management practices with the intent of creating resilient, healthy forests more capable of resisting these perturbation factors.

In 2019, RASS forestry staff reviewed four proposals for jurisdictional timber harvesting projects on private lands. These projects were designed to meet specific silvicultural goals, based upon existing forest conditions, with the intent of creating favorable conditions for long-term forest health and timber value. Three of the project sites were within New York State Working Forest Conservation Easements, and all were subject to the standards of third-party forest certifications. Agency forestry staff also conducted compliance reviews on several previously issued permits for jurisdictional timber harvests, to ensure the protections of the permit conditions were being followed. Since 2013, the Agency has reviewed and issued permits for 28 timber harvest projects on approximately 7,700 acres, comprising a variety of silviculture treatment types, including shelterwood, clear-cut, thinnings, salvage, and selection harvests. This harvest acreage comprises about 9/10ths of one percent of the approximately 785,000 acres of working forest conservation easement land in the Adirondack Park.

In October and December, Agency staff attended conferences addressing the role of Adirondack forests in climate change mitigation, and ongoing monitoring projects throughout northeastern forests.

RASS staff continue to be engaged with State Agencies, forest health researchers, and APIPP to monitor invasive pest disturbances within the lands and waters of the Adirondack Park. Continued vigilance and public education regarding these threats will be increasingly important in coming years, as the spread of pests and our response to them impacts the health of Adirondack forests.

## **Committee and Organizational Affiliations**

During the course of the year RASS staff participate in numerous committees and working groups, provide education and outreach to a wide variety of participants, and attend conferences and workshops to further Agency expertise.

Committee and working groups include:

- Adirondack Park Invasive Plant Program (APIPP) Meetings
- Adirondack Aquatic Invasives Species Task Force Meeting
- Citizen Science Lake Management Tracker Meetings
- FEMA Risk Map Discovery Meetings
- Hydrilla Task Force Meetings
- Interagency Climate and Resilience Work Group (ICARWG) Meetings
- Lake Champlain Basin Program Meetings
- Lake Champlain Sea Grant Meetings
- NYS Climate Change Workgroup Meeting
- NYS Invasive Species Council Meetings
- NYS PRISM's Meetings
- NYS Staying Connected Initiative (SCI) Meeting

Conferences and Training for staff included:

- Adirondack Champlain Regional Salt Summit
- Adirondack Lakes Alliance 2019 Symposium: Preparing for Challenges: Tools, Resources and Coordination
- Adirondack Research Consortium Annual Conference
- Adirondack Research Consortium Forestry Roundtable
- Common Ground Alliance
- Cornell Cooperative Extension of St. Lawrence County and NYS Department of Environmental Conservation "Emerging Forest Pests: Identification, Prevention & Management"
- North American Invasive Species Management Association (NAISMA) conference
- Northeastern Alpine Stewardship Conference
- NYS Federation of Lakes Association Conference
- NYS Natural Heritage Program training on the updated iMap Program
- NYS Society of American Foresters Annual Meeting
- NYS Wetlands Forum Annual Conference
- Onsite Wastewater Treatment Training
- Stormwater Pollution Prevention Plan (SWPPP) Review Training
- Town of Bolton Septic Inspection Program Inspection Training
- Webinars
  - Driving Sustainability, Resilience, and Performance with LEED for Cities/Communities in the NY Olympic Region
  - Stream Compensatory Mitigation
  - Siting Solar Farms

- An Ecological Framework for Reviewing Compensatory Mitigation: Oversight and Compliance
- Invasive Species Management in National Parks
- Wet Pond Design Training
- Forest Ecosystem Monitoring Cooperative Conference

Outreach and Education included:

- Adirondack Lakes Alliance Resource Fair: APA/APIPP Lake Management Tracker Program
- Adirondack Watershed Institute Steward Training
- Common Ground Alliance: provided expert perspective to break out group on aquatic invasive species and boat washing stations
- Code Enforcement Officer Workshop
- NYS DOT and NYS DEC Wetland Recognition Training
- NYS Invasive Species Council Presentation: APA/APIPP Lake Management Tracker Program
- North American Invasive Species Management Association (NAISMA) conference presentation: Adirondack aquatic invasive species management tracker program
- NYS Federation of Lakes Association Conference presentation: “Adirondack AIS Manager Program: A Citizen Science based Monitoring Program to Track the Effectiveness of Aquatic Invasive Species (AIS) Management”
- NYS Wetlands Forum Annual Conference presentation: “Wetland Regulations in the Adirondack Park”
- Provided on-site wastewater treatment system training at the 2019 Local Government Day Conference
- Staff completed Agency guidance for evaluating existing on-site wastewater treatment systems
- Trained volunteers from Paradox Lake, Lincoln Pond and Hadlock Pond on the Lake Management Tracker process.