CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

MEETING OF MAY 6-7, 2020

ITEM 5
Land Disposal Core Regulatory Program Review

CHRONOLOGY	
2014 to present	Water Board staff have annually presented an informational item summarizing the priorities and accomplishments by fiscal year for the Lahontan region.
March 13-14, 2019	The Water Board held an informational item summarizing the organization's annual priorities and accomplishments. As part of this discussion, the Water Board identified key projects for the current and upcoming fiscal years, including Water Board workshops and program reports.

BACKGROUND

At the March 13-14, 2019 Water Board meeting the Land Disposal Program (LDP) core program review was identified as a priority project for 2020. The LDP staff provide oversight of facilities that discharge waste to land under Waste Discharge Requirements that are governed primarily by California Code of Regulations (CCR), title 27, and issued by the Water Board. Examples of facilities regulated under the LDP are landfills, mines, composting operations, cement plants, land treatment units, and energy-producing facilities (solar fields and compressor stations).

ISSUES

It is a challenge to adequately implement the LDP with limited resources and with less resources than other Regional Boards. Water Board staff project prioritization and work planning are key to making our LDP successful.

DISCUSSION

This core program review describes the program, provides a discussion of programmatic challenges and resource limitations, including unaddressed work, and the innovative ways in which staff are confronting those challenges to meet the needs of the LDP. Recommendations for continued implementation of our existing strategies, new strategies that can implemented without external resources, and new strategies that would require external resources are provided for improving efficiencies to better protect water quality.

PRESENTERS
Christina Guerra, Engineering Geologist, Lahontan Water Board

PUBLIC OUTREACH/INPUT
Staff Report and Water Board meeting presentation posted on the Lahontan Water Board webpage on April 15, 2020.

RECOMMENDATION
This is an information item and no formal action is requested, though the Water Board members may give direction to staff.

ENCLOSURE	ITEM	BATES NUMBER
1	STAFF REPORT Land Disposal Core Regulatory Program Review	**5 - 3**
2	Staff Presentation	**5 - 27**

ENCLOSURE 1

Land Disposal
Core Regulatory Program Review

May 2020

Report to the Lahontan Regional Water Quality Control Board
Patty Z. Kouyoumdjian
Executive Office

LAND DISPOSAL CORE REGULATORY PROGRAM REVIEW

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California Environmental Protection Agency
Jared Blumenfeld, Secretary
State Water Resources Control Board
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LAND DISPOSAL PROGRAM CORE REGULATORY REVIEW SUMMARY

The Land Disposal Program (LDP) oversees facilities that discharge waste to land, such as landfills, mines, and compressor stations, under Board Orders, issued by the Water Board that are governed by California Code of Regulations (CCR), title 27. We have over 90 regulated facilities distributed across the region, the second highest number of regulated facilities statewide, yet we are provided only a fraction of the staff resources allocated to other Regional Water Boards to manage the LDP. With our limited resources, LDP staff have had to develop creative solutions and prioritization strategies so that those sites that have the highest threat to water quality (e.g., human health and the environment) and/or threaten a drinking water source are highest priority. One of our innovative ways to meet the needs of the program is to cross-train LDP staff in multiple water quality programs, this allows for a holistic approach to water quality and has proven to be a successful strategy for our LDP. With most of our resources focused on permitted facilities, few resources are available to address non-permitted sites such as closed or abandoned waste disposal sites and abandoned mines. However, we have dedicated resources to developing a regional General Order that will specify standards for maintenance, monitoring, and reporting associated with closed, abandoned waste disposal sites to help streamline our regulatory approach for these types of sites.

PURPOSE

This Program Core Review is a broad overview of the Land Disposal Program (LDP), which is one of the Lahontan Regional Water Quality Control Board's (Water Board's) core regulatory programs. Staff in the LDP provide oversight of facilities that discharge waste to land under Waste Discharge Requirements (WDRs or Board Orders) that are governed by California Code of Regulations (CCR), title 27, issued by the Water Board. These types of discharges are at facilities such as landfills, mines, composting operations, cement plants, land treatment units, and other facilities that discharge wastes to land such as surface impoundments at energy-producing facilities like natural gas compressor stations and solar facilities. This Program Core Review includes a discussion of programmatic challenges and resource limitations, including unaddressed work, and the innovative ways in which staff are confronting those challenges to meet the needs of the program. Recommendations for improving efficiencies to better protect water quality are also provided herein.

PROGRAM OVERVIEW

The discharge of solid and liquid waste to land is subject to multiple federal, state, and regional requirements. The types of wastes in this program include municipal solid waste (MSW), designated waste, nonhazardous waste, and mining waste. Without protective measures, these types of wastes have the potential to degrade water quality and impair the beneficial uses of surface and groundwaters and, therefore, must be contained to isolate them from the environment.

THE REGULATIONS

Federal

The Code of Federal Regulations (CFR) is a compilation of federal regulations codified and enforced by federal agencies. CFR, title 40 – Protection of the Environment (40 CFR), consists of all the regulations governed by the Environmental Protection Agency (EPA). CFR, title 40, parts 257 and 258, are federal regulations for Classification of Solid Waste Disposal Facilities and Practices and Municipal Solid Waste Landfills, respectively (Subtitle D). The states are encouraged to assume primary responsibility for implementing hazardous and non-hazardous waste programs through state adoption, authorization, and implementation of the regulations. In California, state regulations pertaining to discharges of waste to land are generally more stringent than federal regulations.

State

CCR, title 27, Environmental Protection, Division 2, Solid Waste, was promulgated in 1997, and pertains to solid waste management and disposal for facilities that were closed, active, or otherwise received waste after November 27, 1984. CCR, title 27

contains regulations specific to and/or more stringent than 40 CFR, and includes prescriptive and performance standards for siting of a facility, construction of waste management units, monitoring, site closure, and post-closure monitoring and maintenance. CCR, title 27 specifies criteria for classification of waste (e.g., MSW, non-hazardous, designated, and mining wastes) and for waste management unit classification (e.g., Class I for hazardous waste, Class II for designated waste, Class III for non-hazardous waste).

A pertinent component of CCR, title 27 is the allowance of an engineered alternative to a prescriptive standard if the discharger can show that the prescriptive standard is not feasible and that there is an alternative that will meet or exceed the performance goal of the prescriptive standard. While engineered alternatives afford equal or better protection than the prescriptive standard, it also means that every engineered alternative needs to be evaluated by staff under greater scrutiny, is considered a discretionary action, and all engineered alternatives must be approved by the Water Board. This is a very time-intensive process. In the Lahontan Region, the most common engineered alternative proposed by dischargers is for the waste management unit liner system. The prescriptive standard for a surface impoundment, for example, is either a single clay liner or a double clay liner system with a Leachate Collection Recovery System (LCRS), both having a hydraulic conductivity of at least $1x10^{-6}$ centimeters per second (cm/sec). Facilities propose engineered alternatives for construction of the surface impoundment liners because construction of the prescriptive clay liner is not generally feasible in arid environments. The construction of a prescriptive standard liner is not feasible because it may be unreasonably and unnecessarily burdensome and will cost substantially more than alternatives, which meet the criteria, or is impractical and will not promote attainment of applicable performance standards. Repeated wetting and drying cycles are expected to desiccate and crack a compacted-clay liner during typical operational conditions. Cracking would compromise the clay liner and not achieve the performance standard. Alternately, there may be a specific engineered alternative that is consistent with the performance goal of the prescriptive standard and affords equivalent protection against water quality impairment.

CCR, title 27 requires monitoring of the groundwater and the vadose zone to assure the earliest possible detection a release of constituents of concern (COCs) from the waste management unit to the underlying soil and/or groundwater (Detection Monitoring Program or DMP). When a release to the environment is confirmed, CCR, title 27 specifies the required steps and establishes a time schedule to evaluate the source and nature of the release (Evaluation Monitoring Program or EMP). Once the source and nature of the release has been determined, CCR, title 27 specifies the steps to develop and implement a remedial action program to the effected environment (Corrective Action Program or CAP). CCR, title 27 requires cleanup to background conditions unless concentration limits greater than background have been established for those COCs of the release. To establish concentration limits greater than background, the

discharger must show that it is technically and economically infeasible to achieve background water quality levels, and they must be approved by the Water Board.

CCR, title 27 requires the Regional Boards to establish in WDRs a Water Quality Protection Standard (WQPS) to evaluate compliance with the required monitoring programs. The WQPS consists of a defined list of COCs, the concentration limits for each COC, the point of compliance (a vertical surface hydraulically downgradient of the containment unit extending through the upper most aquifer), and all monitoring points for each monitored medium (groundwater and vadose zone). The Executive Officer has the authority to review and approve the WQPS, or any modification thereto, for each monitored medium, with the exception that concentration limits greater than background must be approved by the Water Board. The WQPS is updated periodically and applies during the active life of the waste management unit, the closure period, the post-closure period, and any compliance period.

CCR, title 27 requires dischargers to maintain financial assurance mechanisms for closure, post-closure monitoring and maintenance, and for corrective action for a known or reasonably foreseeable release, as applicable. These mechanisms must be maintained and can be accessed in the event a discharger is unwilling or unable to perform any of those functions. CCR, title 27, also specifies the types of mechanisms that can be accepted, such as bonds or letters of credit. Preliminary Closure and Post-Closure Maintenance Plans (PCPCMP, required during the active life of a waste management unit) and Post-Closure Maintenance Plans (PCMP, required during the post-closure period of a waste management unit) describe the activities to perform closure, post-closure maintenance, and corrective action (if warranted), and include detailed cost estimates to carry out those activities by a third party. These cost estimates are the basis for the financial assurance amount provided in the financial assurance mechanism.

With the requirements established for monitoring in CCR, title 27, and with a built-in corrective action component, we can identify releases earlier and address concerns and require cleanup without having to go through formal enforcement processes (e.g., Cleanup and Abatement Order). An example of this is the recently approved New Corrective Action Program and Revised Post-Closure Waste Discharge Requirements for the Apple Valley Class III Landfill, Board Order No. R6V-2019-0247. The Apple Valley landfill is located in a rural area of San Bernardino County and surrounded by private residences dependent on domestic wells for drinking water supply. Groundwater monitoring wells were installed following the promulgation of CCR, title 27 and 40 CFR Subtitle D regulations. Groundwater analytical data from these wells indicated that a release had occurred from the landfill. The discharger evaluated the release and determined the sources to be leachate, septage, and landfill gas. Several remedial options have been evaluated since including a pilot-scale groundwater extraction system to evaluate the effectiveness and feasibility of groundwater cleanup. The system ran for several years and proved to be infeasible. The discharger ultimately determined that passive landfill gas venting and monitored natural attenuation were the most

technically feasible options to control the release and restore groundwater to background conditions. In June 2019, Board Order No. R6V-2019-0247 was adopted to formally accept the proposed CAP for the Apple Valley landfill. The discharger is currently installing a set of sentry wells to ensure protection of the downgradient domestic supply wells.

Other state regulations and policies that are applicable to LDP waste discharges include California Water Code, Division 7, sections 13172,13173, and 13267; State Water Resources Control Board (State Water Board) Resolution 93-62, Policy for Regulation of Discharges of Municipal Solid Wastes; State Water Board General Waste Discharge Requirements for Composting Operations, State Water Board Order WQ 2015-0121-DWQ (General Composting Order); and the State's Toxic Pits Cleanup Act. The State Water Board adopted General Waste Discharge Requirements for Disaster-Related Wastes on February 18, 2020; this order allows the discharge of disaster-related wastes to be disposed of in lined, class III landfills and allows disaster-related wastes to be temporarily staged in areas either at a landfill or other area, provided certain conditions are met, and best management practices for storm water controls are used effectively. There are only five landfills in the Lahontan Region eligible to receive disaster-related wastes for disposal. In some cases, LDP facilities may also need to be permitted under one or more other core regulatory program permits such as the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ (Industrial Storm Water Permit).

Regional

Regional requirements applicable to facilities in the LDP include the Water Quality Control Plan for the Lahontan Region (Basin Plan), which includes prohibitions on certain activities in certain areas and sets beneficial uses for surface and groundwaters in the region. The State Water Board's General Waste Discharge Requirements for Disaster-Related Wastes, adopted February 18, 2020, supersedes the Lahontan Water Board Resolution No. R6V-2015-0009, An Emergency Conditional Waiver of Statutory Requirements to File a Report of Waste Discharge and to Adopt Waste Discharge Requirements for Management and Disposal of Solid Waste from Emergencies and Disasters, which will expire on March 12, 2020. LDP staff are currently drafting a regional General Order that will specify standards for maintenance, monitoring, and reporting associated with Closed Abandoned Inactive (CAI) sites. We hope to bring this General Order to the Water Board for consideration of adoption Spring 2020.

Differences in Regulations

The State of California is required to have state regulations that meet or exceed 40 CFR, and there are notable differences that exemplify this. For example, CCR, title 27 requires cleanup of COCs to background water quality concentrations (unless a concentration limit greater than background has been approved), while 40 CFR only requires cleanup of COCs to established maximum contaminant levels (MCL)

regardless of background concentrations for any given COC. CCR, title 27 requires a minimum synthetic liner thickness of 40-mil, while 40 CFR specifies a minimum liner thickness of 30-mil. CCR, title 27 also contains requirements specific to California's unique geology and seismic activity, including siting requirements for waste management units and seismic analysis and design that are not included in 40 CFR.

Climate Change

The Water Board, in November 2019, adopted the Region's Climate Change Mitigation and Adaption Strategy (Climate Change Strategy). The Climate Change Strategy directs staff to focus efforts and resources in four resource areas: Protection of Wetlands, Floodplains, and Headwaters; Infrastructure Protection; Protection of Groundwater Quality and Supply; and Protection of Headwater Forest and Promoting Fire Resiliency. The "Protection of Groundwater Quality and Supply" resource area is intended to protect groundwater quality and improve groundwater recharge for purposes of protecting source water and building sustainability and drought resiliency. CCR, title 27 supports this resource area through implementation of the required groundwater monitoring programs, with a built-in corrective action component, to identify releases to groundwater at the earliest possible detection and to address concerns and require cleanup within a relatively short period of time.

As a result of climate change, declining groundwater levels are being observed throughout the Region, and this has a direct impact on LDP dischargers. As groundwater levels drop, dischargers are required to install new, deeper groundwater monitoring wells in order to maintain the monitoring programs required by CCR, title 27. Groundwater monitoring wells are expensive to install, especially those installed at great depths. If groundwater levels continue to fall, it might be reasonable to consider the installation of nested or cluster monitoring wells, where a series of wells are installed contemporaneously and screened at different depths in the aquifer (shallow, middle, deep); these wells can be installed at the same time and could be a significant cost savings to the discharger.

Climate change may also have direct impact on facility inspections. The region is large with extreme climate variations (extreme heat and snow), so it may be prudent to conduct inspections at different times of the year to determine if a facility is in compliance during extreme climate conditions. Some facilities may be more prone to spills and/or complaints in wet weather conditions necessitating multiple inspections. Fire incidences are known at LDP facilities and can warrant unplanned staff inspections too. For example, fires at composting facilities tend to occur during the extreme ambient heat conditions in the late summer. In addition, landfill operators are reporting fires at regulated facilities more frequently than LDP staff had been aware of previously. While the circumstantial causes of these fires are still being investigated, they may be attributed to increased ambient temperatures.

LDP staff are re-evaluating the findings pertaining to siting, maintenance, and final closure conditions of facilities that closed in the 1990s. The Furnace Creek Landfill in Death Valley National Park is such a facility. The closure WDRs for this facility were adopted in 1996, and findings were made that supported no groundwater monitoring for the landfill based on evidence that groundwater beneath the site was greater than 300 feet below ground surface (bgs). With the issuance of State Water Board's per- and polyfluoroalkyl substances (PFAS) 13267 Investigative Order WQ-2019-0006-DWQ, the Furnace Creek Landfill was identified as a landfill that potentially accepted, stored, or used PFAS materials, and therefore warrants PFAS groundwater sampling. The Death Valley National Park representatives initially requested exemption from the PFAS groundwater sampling based on low annual rainfall, a final clay cover, low potential for leachate generation, and no nearby drinking water wells (all drinking water for the park is sourced from springs). New hydrological data for the park indicates that groundwater is likely much shallower than 300 feet bgs, and that there are drinking water wells in the vicinity of the landfill. LDP staff are working with park service representatives to develop an acceptable workplan to sample groundwater for PFAS in accordance with the PFAS 13267 Investigative Order WQ-2019-0006-DWQ, and evaluating whether groundwater monitoring should be required in the Monitoring and Reporting Program for the Furnace Creek Landfill.

THE WASTE IN OUR SPACE

Permitted Facilities

There are 90 LDP facilities in the Lahontan Region currently regulated by the Water Board (Figure 1): 48 landfills, 17 mines, 11 gas and energy facilities, 6 others (land and soil treatment, former sawmill), 5 cement plants, and 3 composting facilities. Figure 2 shows the distribution of the 90 LDP facilities across the Region, 78 are located south of Conway Summit and 12 are located north of Conway Summit. Of the 48 landfills, 18 are open and actively receiving MSW, 30 are closed and in post-closure monitoring, and all but five (5) are unlined waste management units. The five lined landfill facilities have approved engineered alternative liner systems and include the Lancaster Landfill, Antelope Valley Landfill (Palmdale), Fort Irwin Landfill, Barstow Landfill, and Victorville Landfill. An engineered liner system has been approved for the Ridgecrest Landfill, though a lined cell has not yet been constructed. All landfills north of Conway Summit are unlined; of these 12 landfills, 2 are operating, and 10 are closed and in post-closure monitoring. Most mining units are lined. One mining facility still has ponds operating under a waiver from the State's Toxic Pits Cleanup Act, but the discharger is in the process of converting those ponds to be compliant with CCR, title 27 requirements.

Annual fees are charged for each Board Order issued, pursuant to the Porter-Cologne Water Quality Control Act (Water Code). The annual fees are based on the discharges' threat to water quality (TTWQ) and complexity (Complexity) rating according CCR, title 23 Division 3, Chapter 9 Waste Discharge Reports and Requirements, Article 1, Fees (Fee Schedule). There are three TTWQ and Complexity categories. TTWQ category 1 through category 3 and Complexity category A through category C, with categories 1

and A having a higher TTWQ and categories 3 and C having a lower TTWQ. There are 15 facilities that are determined to be a TTWQ 1, 30 that are TTWQ 2, and 45 that are TTWQ 3.

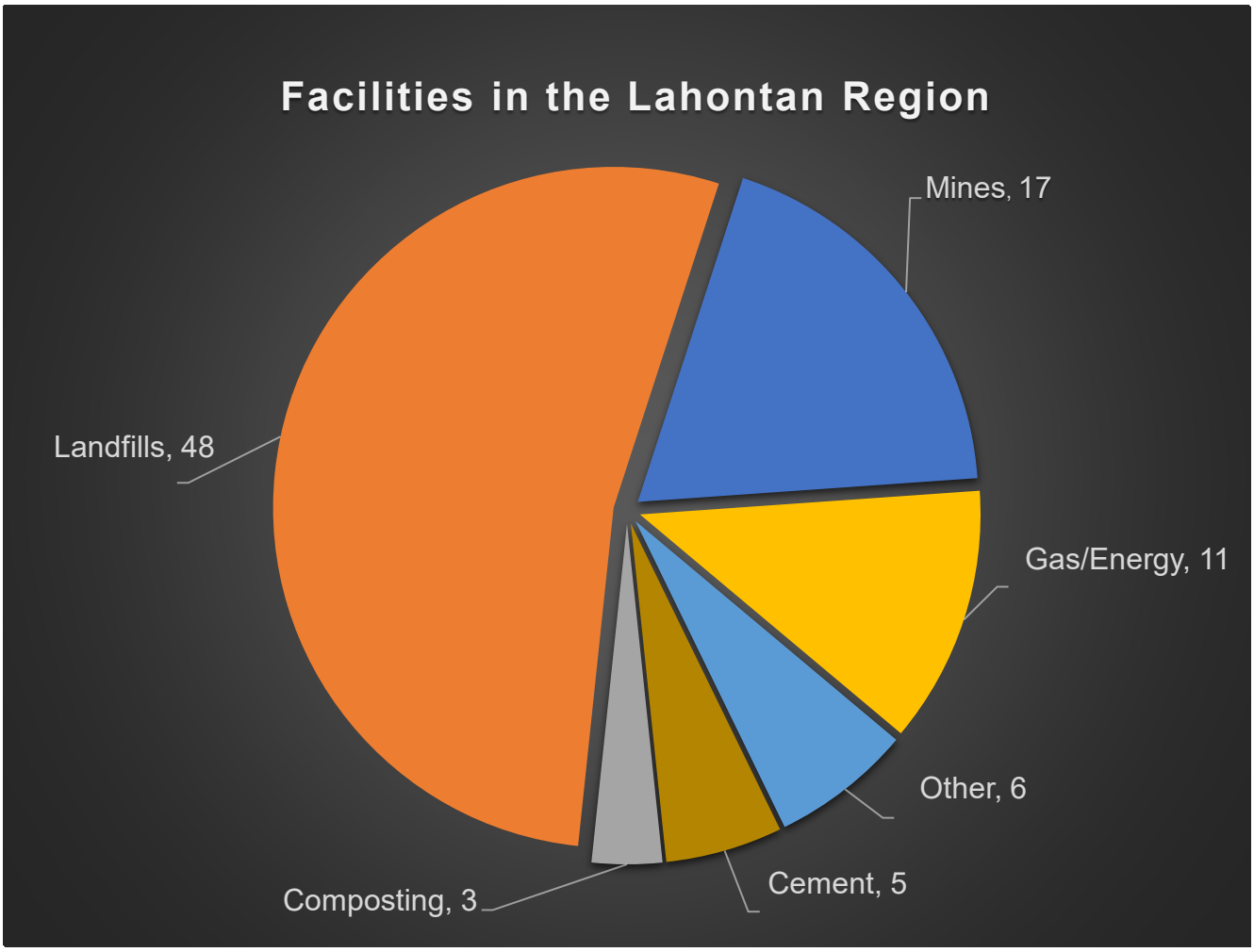

Figure 1 – Number of types of LDP facilities in the Region.

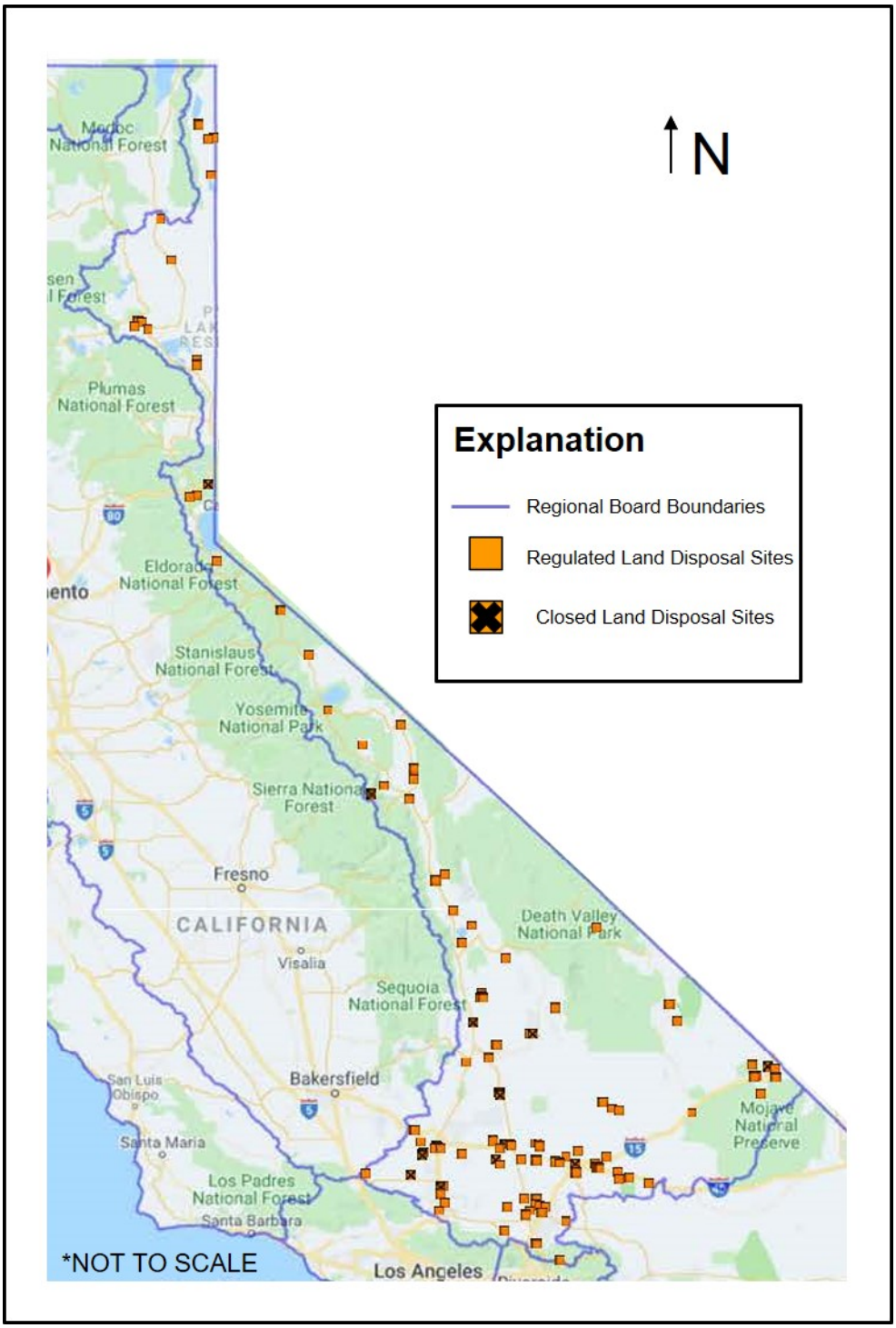

Figure 2 – Distribution of the LDP sites throughout the Region.

There are 11 facilities with a Complexity of A, 52 facilities with Complexity B, and 27 with Complexity C. Table 1 provides a summary of the facilities in the region and their TTWQ and Complexity rating.

Complexity	TTWQ 1	TTWQ 2	TTWQ 3
A	4	7	0
B	11	18	23
C	0	5	22

Table 1. Summary of TTWQ and Complexity for permitted LDP facilities in the Lahontan Region.

Threat to water quality varies depending on the type of facility as well as the climate in which the facility is located. For example, impacts to water quality from landfills in arid environments are primarily from landfill gas; whereas, impacts to water quality from landfills in wet environments are primarily from leachate. Impacts to water quality from mines tend to be inorganic COCs such as arsenic and cyanide as a byproduct of the milling process. Impacts to water quality from energy production facilities tend to be concentrated salts and naturally occurring metals including total dissolved solids, nitrate, arsenic, and chromium.

Of the 90 facilities, approximately half have a detected release. The majority of the releases are associated with unlined waste management units. CCR, title 27 requires a Detection Monitoring Program to determine the presence of a release, an Evaluation Monitoring Program to determine the nature and extent of a release, and a Corrective Action Program to remediate a confirmed release. A facility could be in all three monitoring phases at any given time. Because of the progressive monitoring and corrective action processes established in CCR, title 27, few facilities have a Cleanup and Abatement Order (CAO) issued separately from their WDRs or go into the site cleanup program with a cost recovery agreement. There are also prescriptive requirements for the time required to perform and implement evaluation and corrective action activities; ideally, this streamlines the process to get to remedial action activities in the event of a release.

As mentioned earlier, CCR, title 27 has requirements that dischargers maintain financial assurance mechanisms for closure, post-closure, and corrective action activities (as appropriate) in the event they are unwilling or unable to perform the actions themselves. However, except in extreme situations (like bankruptcy), Water Board staff prefer to work with dischargers to achieve compliance and work iteratively to protect and remediate water quality. Additionally, it is beneficial to maintain a positive, productive working relationship with dischargers even while going through enforcement proceedings.

Due to limited resources, staff prioritize release responses according to those that have the highest threat to water quality (e.g., human health and the environment) and/or threaten a drinking water source as being the highest priority. While this prioritization effort is important to maintain a constructive path forward, it is also important to realize

that there are some facilities with a known release but no remediation efforts yet underway because the threat to nearby receptors has been determined to be low and there is no threat to a drinking water source.

Non-Permitted Facilities

While permitted facilities are known locations and constructed with containment systems designed to prevent impacts to water quality and monitoring systems to evaluate the effectiveness of those containment systems, unpermitted facilities are, for the most part, in unknown locations with no containment systems. Further, these sites do not have monitoring programs in place to evaluate impacts to water quality. It is only after there is an identified release to the environment that these sites are located and prioritized.

While staff spend a significant amount of time on permitted facilities, there are many non-permitted facilities that also require staff resources. Closed, abandoned, or inactive (CAI) landfill sites are areas where disposal of nonhazardous solid waste had occurred historically, but these sites were either closed, abandoned, or otherwise became inactive prior to November 27, 1984. Some CAI sites were operated by open burning of refuse ("burn dumps"), and some are co-located with waste disposal sites that were active after November 27, 1984. The Department of Resources, Recycling, and Recovery (CalRecycle) tracks CAI sites through their Solid Waste Information System and adds new sites to the database as locations are verified. There are over 2,500 CAI landfills or burn sites statewide. The number of known CAI sites in the Lahontan Region is around 40, though it is likely that there are many more yet to be discovered. LDP staff are currently drafting a regional General Order that will specify standards for maintenance, monitoring, and reporting associated with CAI sites. We hope to bring this General Order to the Water Board for consideration of adoption Spring 2020.

Abandoned Mines

In addition to CAI landfills and burn sites, there are also many abandoned mines within the Lahontan Region that similarly are not subject to CCR, title 27. Abandoned mines are defined as any mineral extraction, exploration, or borrow operation that may include, but is not limited to, shafts and adits, buildings or workings, open pits, stockpiles, roads, processing areas, waste disposal areas, or tailing piles and ponds. There are an estimated 30,000 to 70,000 abandoned mine sites statewide, though the number within the Lahontan Region is not known. In 1997, the State of California Department of Conservation (DOC) formed the Abandoned Mine Lands Unit (AMLU) within the Office of Mine Reclamation, to address issues associated with abandoned mines. The DOC has developed the California Abandoned Mines Prioritization Tool (CAMPT) to prioritize and rank abandoned mine sites for additional study and cleanup based on threat to human health and the environment, but the DOC is not involved in remediation should pollution be identified at any of these sites. Additional research needs to be done to address abandoned mines, although the AMLU has been relatively idle for several years. The Water Boards currently do not have an abandoned mine program, though

depending on threat to water quality, abandoned mines could be covered under the General Order being developed for CAI sites.

Workload Distribution

Of the 90 sites regulated under the LDP, 18 sites are managed by staff in the South Lake Tahoe office with the remaining 72 sites managed by staff in the Victorville office. This distribution of work is primarily because of the geographic location/distribution of the sites. The number of LDP sites that a single staff person can manage is based on an estimated number of staff hours allocated for each individual site for a given fiscal year (FY). To aid in the prioritization of staff workload, those sites with a greater TTWQ and Complexity typically have a higher allocation of estimated staff hours. Those sites with a lower TTWQ and Complexity are allocated less staff hours, and in some instances are categorized under “unaddressed” work with no hours allocated.

FUNDING THE PROGRAM

The Lahontan Region has 3.2 Personnel Years (PYs) to manage the LDP. On average, that’s about 28 regulated facilities per PY. The 3.2 PYs are distributed between both offices amongst a total of 10 staff. There is an apparent inequitable distribution of LDP program hours between the nine regions. Table 2 shows the number of LDP sites per region based on a 2013 State Water Board Fee Unit facility count, and the distribution of PYs per region based on the Office of Research, Planning, Performance 2018 Performance Report. For example, Region 8 (Santa Ana) has 41 regulated facilities and is allocated 4 PYs to manage those facilities; this equates to roughly 10 facilities per PY, with an average of 208 hours to spend managing one facility. In contrast, the Lahontan Region has 90 regulated facilities and is allocated 3.2 PYs to manage those facilities; this equates to roughly 28 facilities per PY, with an average of 74 hours to spend managing one facility.

From Table 2 you can see that the Lahontan Region has far less resources relative to LDP facilities than any other region. Combined, the average allocation amongst the other regions is 15 regulated sites per PY, compared to the 28 regulated sites per PY in the Lahontan Region. Our average of 74 hours per facility equates to less than two full work weeks that can be dedicated to any given facility, and that assumes no other special projects need attention (to be discussed in further detail later in this report). By comparison, on average statewide, staff are able to spend approximately 139 hours or almost one full working month dedicated to each permitted facility. The impact to the Lahontan Region is that we do not have the staff resources to adequately manage our LDP facilities, resulting in less inspections, less time to comprehensively review self-monitoring reports, and less permit reviews. Our average allocation of 28 facilities per staff is not sustainable for the LDP, and the expectation that we can provide the same level of oversight as other regions that have more resources is unrealistic.

Region	Facilities	% Facilities Statewide	Total Region % Facilities	PYs	Approximate # of Facilities/PY	Average hours/ Facility
R-1	30	4%	-	2.2	14	149
R-2	64	10%	-	3.2	20	104
R-3	47	7%	-	2.6	18	116
R-4	53	8%	-	3.5	15	139
R-5R	33	5%	35%	19.4	12	173
R-5S	96	14%				
R-5F	105	16%				
R-6A	12	2%	13%	3.2	28	74
R-6B	78	11%				
R-7	75	11%	-	5.1	15	139
R-8	41	6%	-	4	10	208
R-9	40	6%	-	3	13	160
Total	**671**	-	-	**46.2**	-	**139**

Table 2. Summary of resource allocation and number of permitted LDP facilities statewide, 2013.

ROUTINE WORKLOAD

Routine work for LDP staff consists of conducting inspections, drafting inspection reports, and conducting reviews of routine monitoring reports and other technical documents. Approximately 10 to15 hours per week per staff is spent on accepting and uploading project correspondence to the State Water Board's GeoTracker database, attending meetings, communicating with the discharger and/or their consultant, and managing files and correspondence.

Technical document review accounts for a significant amount of staff time. During FY 17/18, staff reviewed more than 131 technical documents; during FY18/19, staff reviewed over 180 technical documents. Technical documents routinely reviewed by staff include reports of waste discharge (ROWDs) or joint technical documents (JTDs, which is a special type of ROWD which includes information to satisfy both Water Board and CalRecycle requirements for solid waste facilities such as MSW landfills), regularly scheduled self-monitoring reports, and financial assurance documents and associated cost estimates. Staff review time for technical documents vary significantly due to site complexity (geology and hydrogeology), data content (too little or a lot of data), determination of compliance with regulation, and collaborating with other agencies and stakeholders. Review of routine documents like JTDs and monitoring reports can also

result in a special project (unplanned workload) if a release to the environment is identified or a change in operation is requested.

It should be noted that landfills are required to submit JTD updates every five years. To ensure consistency in communication, staff oversight of landfills has typically been assigned by county. For fiscal reasons, some counties submit JTD updates for all their landfills at the same time, which means a single staff may be responsible for reviewing multiple JTDs within the 30-day statutory timeframe.

WDRs issued to LDP facilities do not expire, so there is no backlog of permits; however, State Board does prefer that WDRs be updated or reviewed on a five-year cycle. Ideally, WDRs for LDP facilities would be updated as facility needs and site conditions change, which may not necessarily coincide with a regular 5-year cycle.

SPECIAL PROJECTS

Special projects can include revising WDRs or Board Orders, reviewing work plans, final reports for subsurface investigations, engineering design plans, corrective action (cleanup) plans, closure and post-closure maintenance and monitoring plans, and responding to spills or other complaints associated with both regulated and non-regulated facilities. Sometimes special projects can be predicted, such as when a discharger informs staff of the need to revise a WDR. Often, special projects can have some accountability in the budget, but still be unplanned, such as an average number of spills requiring response in a fiscal year. Special projects can also be unplanned and unanticipated, including priorities from the State Water Board such as the March 2019 statewide investigative order for sampling of PFAS at landfills. To date, the Lahontan Region LDP staff have spent approximately 460 hours on efforts related to the PFAS 13267 Investigative Order between March 2019 and December 2019.

It is impossible to predict with certainty what special projects will arise or how much staff time any one may take. However, special projects tend to be high priority and divert time away from routine work. A buffer can be incorporated into the budget to account for special projects, but the buffer will only be an estimate. For comparison, the State's LDP cost factors estimates 800 staff hours to prepare a moderately complicated new WDR and 320 hours to prepare a moderately complicated revised WDR.

PERFORMANCE TARGETS

Performance Targets are set annually for the LDP and typically include a number of new or revised WDRs and facility inspections. New WDRs are typically required for new facilities. Changes to a permitted facility or facility operations may warrant a new WDR, revised WDR, amended WDR, or rescission depending on the proposed change. Not all WDRs are considered equal when determining whether Performance Targets have been met. Amendments and rescissions do not count towards meeting a

Performance Target, although it can take a significant number of staff hours to prepare them.

The number of LDP facilities that staff inspect annually are planned and also count as a Performance Target. Due to limited resources, all 90 facilities cannot be inspected every year; rather, we prioritize our inspections based on the TTWQ and Complexity rating. For FY 18/19, the Performance Target for LDP inspections was 50 facilities; staff exceeded that target and inspected 64 facilities.

PROGRAM CHALLENGES

The main programmatic challenges are listed below, each followed by a brief discussion of how staff have adapted to meet the needs of the program.

WORKLOAD MANAGEMENT

It is a challenge to balance our limited staff resources with the predictable workload (case management, inspections, self-monitoring report reviews) while still being able to manage the unpredictable special projects workload (ROWDs, JTDs, enforcement, technical report submittals, other program case management). And because the Lahontan Region LDP does not have the same resources as other regions do for their LDP staff, prioritization and work planning are key to making our LDP successful.

Inspections are critical in identifying issues of non-compliance and for maintaining good working relationships with dischargers. Since we do not have the resources to inspect every LDP facility every year, we have developed the following inspection schedule strategy: inspect all TTWQ “1” and all Complexity “A” annually; inspect all TTWQ/Complexity “2B,” “2C,” “3B,” and “3C” every other year on a rotating basis. With this strategy we maintain a visible presence at those facilities that pose the highest threat to water quality, while all other facilities are inspected at least once every two years.

LDP staff are not exclusively working only in the LDP, but also work on other core regulatory programs including the Site Cleanup, Underground Storage Tank Program, Enforcement Program, Waste Discharge Requirement Program, Storm Water Program, 401 Water Quality Certification/Dredge and Fill Program, and Department of Defense. Similarly, these programs have assigned facilities with a routine workload, including inspection and Performance Target commitments. While working across programs may seem inefficient, in actuality it improves efficiency. Cross-program knowledge affords LDP staff to think more holistically about the Water Board programs and identify water quality concerns outside the LDP program. For example, LDP staff also perform storm water inspections at all of their assigned LDP facilities, identify where/when a dredge/fill permit may be needed, and identify water quality violations or potential violations and initiate staff-level enforcement, where appropriate. Cross-program training is a successful strategy to maximize limited resources.

LDP staff have developed tools to improve and streamline routine work. Inspection templates are used to train new staff and to assist seasoned staff when inspecting an unfamiliar facility. Templates for new, revised, and amended WDRs have been developed to ensure requirements are consistent with the regulations and to ensure that requirements are consistent among the regulated LDP facilities. To the extent allowed, our scientific aids assist with several routine tasks including initial review of self-monitoring report, some database management, and assistance during inspections. This exposes our scientific aids to a broad range of LDP routine tasks and offers them valuable training to further their career either with the Water Boards or elsewhere.

TRAINING AND TECHNOLOGY

LDP staff require more specialized technical training than some other core regulatory programs. Title 27-regulated facilities require a relatively high-level of technical review from multiple disciplines including slope-stability, seismic hazards, structural geology, hydrogeology, statistical analyses, plan review and grading, and remediation techniques. Staff need to be trained in all these disciplines to properly manage a title 27-regulated facility.

LDP staff need access to and training in current industry standard technology and equipment, including Geographic Information System (GIS) software, field tablets, Global Positioning System (GPS) units, access to high-resolution aerial and infrared imagery, and drones. LDP staff should have access to the same technology and equipment that is used by dischargers and consultants. When technology and equipment is unavailable to LDP staff, and if available is outdated, functions poorly, or does not work, it leads to unproductive use of staff time.

Lack of training, technology, and equipment leads to lower productivity and impacts morale. To compensate, the LDP has developed the following strategy: (1) use in-house experts to provide focused mentoring (applied statistics, groundwater remediation techniques, and structural geology); (2) continue to ask for and receive support from State Board and other Regional Board staff as the need/topic arises; (3) attend relevant Water Board Academy training classes; (4) have more LDP staff participate in the program roundtable to gain knowledge, learn about training opportunities, and hear lessons learned from colleagues working with similar issues and cases; and (5) participate in trainings offered by other federal, state or local agencies that co-regulate land disposal sites (e.g., United States Environmental Protection Agency, CalRecycle, Division of Mines and Reclamation, and the Local Enforcement Agencies) to better understand how and where our regulations overlap and how our agencies can work together to achieve compliance. While this strategy does provide additional training resources to LDP staff, it does not address the fiscal constraints for obtaining the newest technology and equipment or improving the technology and equipment we currently use, both of which are outside of our control.

UNADDRESSED WORK

The LDP has 3.2 PYs to manage 90 facilities. However, equitable distribution of staff hours amongst the facilities is not reality; some facilities pose a higher threat to water quality and therefore are allocated more staff hours in accordance with our workplan prioritization strategy. Additionally, there may be some planned and anticipated special projects such as new or revised WDRs. A reduction of hours for a given facility corresponds to one or more routine tasks that will not be completed for a given FY, and we identify this as unaddressed work.

An estimated 0.5 PY of unaddressed work was identified for FY 17/18, and an estimated 1.9 PYs of unaddressed work was identified for FY 18/19. Unaddressed work is associated with low-priority sites, those facilities with the lowest TTWQ and Complexity and require minimal case management. Types of unaddressed work tasks include Board Order updates, re-evaluation of TTWQ and Complexity ratings, database management, and self-monitoring report review. Inspections are not included in the unaddressed work category; inspections are performed for all sites in accordance with our inspection prioritization strategy.

FINANCIAL ASSURANCE REVIEW

Facilities regulated under CCR, title 27 are required to maintain financial assurance mechanisms for closure, post-closure maintenance, and corrective action for a known or reasonably foreseeable release, as appropriate. There are several mechanism types acceptable to the Water Board: letter of credit, performance bond, and financial guarantee bond. These mechanisms must remain valid and accessible to the Water Board in the event a discharger is unwilling or unable to perform any of those functions. PCPCMP (required during the active life of a waste management unit) and PCMP (required during the post-closure period of a waste management unit) describe the activities to perform closure, post-closure maintenance, and corrective action (if warranted), and include detailed cost estimates to carry out those activities by a third party. These cost estimates are the basis for the financial assurance amount provided in the financial assurance mechanism. PCPCMPs and PCMPs are to be reviewed annually and updated, as needed, as site conditions change; the associated cost estimates are also to be reviewed annually and updated to reflect changes in the plans or to reflect increases due to inflation. When a cost estimate changes, the corresponding financial assurance mechanism must be updated commensurate with that change.

Review of financial assurance cost estimates has been and continues to be a struggle for LDP staff; this struggle is not only for the Lahontan Region but for all LDP staff statewide including the State Water Board. In order for any cost estimate to be reasonable it must be based on accurate pay scales, current labor and equipment costs, and on current standards of practice for the industry. Evaluating “how much is enough” is critical to ensure that the financial assurances provided are reasonable to fund the activities identified and to reduce the State’s liability should it be necessary for

the Water Board to collect on a financial assurance mechanism. All nine regions have requested assistance and training from State Water Board LDP staff on how to review cost estimates and how to evaluate “how much is enough” for activities identified in PCPCMPs and PCMPs. State Water Board staff are in the early stages of developing a training module for financial assurance review. In the meantime, LDP staff will continue to critically review the cost estimates, learning from past projects and bankruptcies, and using our best professional judgement.

OUTDATED REGULATIONS

CCR, title 27 was last updated in January 2019, though the State Water Board promulgated sections have not been updated in decades and in some instances refer to requirements that are outdated or are no longer standards of practice. For example, CCR, title 27 specifies that the prescriptive liner standard for a waste management unit is 2-feet of clay. A clay liner in an arid environment is likely to desiccate and crack, and then fail as a liner system. Fortunately, CCR, title 27, section 20080, allows dischargers to propose an engineered alternative to the prescriptive standard if a demonstration can be made that the alternative provides equal or greater protection to water quality. It is generally recognized that a geosynthetic double-liner system is a preferred engineered alternative bottom liner system, an evapotranspirative vegetated soil cover is a preferred engineered alternative final cover system, and both have been shown to provide equal or better protection of water quality compared to the prescriptive standard. Because engineered alternatives must be demonstrated to provide equal or better protection compared to the prescriptive standard and be approved by the Water Board, considerable staff time is required to evaluate proposed engineered alternatives on a case-by-case basis and then to prepare revised or amended WDRs for Water Board approval. State Water Board staff are in the early stages of updating State Water Board promulgated sections of CCR, title 27 regulations, though it will likely be a several year process to complete.

PROGRAM MANAGEMENT STRATEGIES

Based on the discussion herein, Water Board staff implement and/or are developing the following strategies for the LDP. These strategies are categorized into one of two types: existing strategies that are successful, with minor modifications where warranted; and developing strategies that require no new external resources to implement (within our control).

EXISTING STRATEGIES

1. Workload prioritization strategy: facilities with the highest TTWQ and Complexity and threaten a drinking water source are given highest priority and allocated more time.

2. Inspection prioritization strategy: annual inspections for any TTWQ “1” and any Complexity “A,” and biennial inspections for TTWQ/Complexity “2B,” “2C,” “3B,” and “3C.”

3. Use scientific aides to assist LDP staff with routine work including self-monitoring report review, database management, and assistance with facility inspections. This provides scientific aids valuable training and mentoring and allows LDP staff to focus time on technical reviews and special projects.

4. Cross-program training is a successful strategy to maximize limited resources. Cross-program training affords LDP staff to think more holistically about the Water Board’s programs and identify water quality concerns outside the LDP program.

5. Continue to support State Water Board staff to maintain a training contract with industry experts in various topics including liners systems, seismic analysis, and slope stability; these trainings are invaluable and provide both classroom instruction and individual consultation on a case-by-case basis.

6. Continue to ask the Water Boards Training Academy to develop focused training for LDP staff as the need/topic arises.

DEVELOPING STRATEGIES

1. Enhance communication with the dischargers to better identify future special projects given their fiscal and budgetary constraints. This would assist work planning efforts to set realistic Performance Targets for new or revised WDRs.

2. Work with State Water Board to identify additional resources to support the LDP.

3. Use in-house expertise to develop focused training modules (e.g., statistics, slope stability, soil compaction and general geotechnical practices, remedial options, hydrogeology, and structural geology). Each training module could provide a checklist of what to look for in a report.

4. Encourage and support more LDP staff participation in the program roundtable to gain knowledge, learn about training opportunities, and hear lessons learned from colleagues working with similar issues and cases. Networking and partnering with other LDP staff from other regions is an invaluable resource.

5. Collaborate with other state and local agencies that co-regulate land disposal facilities to stay informed and to have a better understanding all regulatory issues associated with a facility.

6. Activities that result in staff maintaining an on-site presence should be prioritized, where feasible.

7. Train in-house administrative staff to assist in the financial assurance cost estimate review. This staff could verify that the estimates are using accurate pay scales, suitable inflation factors, current labor and equipment costs, and are based on current standards of practice for the industry. LDP staff could then focus on ensuring the appropriate activities are identified in the PCPCMPs and PCMPs and be assured that the costs associated with those activities are representative.

8. Evaluate other tools to help prioritize workload.

KEY PROGRAM RECOMMENDATIONS

Water Board staff has conducted a programmatic review of the Water Board's LDP core regulatory program taking into consideration lessons learned over the years regarding what has worked, where opportunities are, and where there is need for change. Based upon this review, staff has the following recommendations.

1. Additional staff resources for the LDP are needed. Continue to work with State Water Board to identify possible funding opportunities.

2. Develop a regional General Order for closed, abandoned, and inactive landfills and burn dumps, as these types of facilities are not subject to CCR, title 27. The General Order will include criteria for enrollment and standards for groundwater monitoring, maintenance, and reporting. Because abandoned mine sites are also exempt from CCR, title 27, the General Order could include criteria and standards for these types of facilities. This General Order is currently scheduled for a board hearing in Spring 2020.

3. Revise monitoring and reporting programs (MRPs) to require dischargers to document fires and fire response actions in routine annual reports. Valuable information would include date and location of fire(s) within the waste management unit, damage and/or repairs to infrastructure, amount of water or other fire suppressant used, and possible source of the fire(s). A general 13267 Investigative Order could be developed to make this universal change for all MRPs, rather than amended MRPs on an individual basis.

4. LDP staff intend to remain engaged with State Board staff to ensure our region-specific concerns are addressed in the updated CCR, title 27 regulations.

5. Build staff capacity by providing the proper training and tools needed to manage an LDP site efficiently and effectively. Specifically, work with State Water Board staff to obtain access to technology for financial assurances and other water quality applications.

ENCLOSURE 2

Agenda Item No. 5

Land Disposal Core Regulatory Program Review

Lahontan Water Board Meeting
May 6-7, 2020

Christina Guerra, P.G.
Engineering Geologist

Program Summary

1. 90 permitted facilities
2. Additional PYs needed
3. Prioritize facilities
4. Resources also spent on non-permitted facilities (burn dumps/abandoned mines)
5. Cross-program training

Topics of Discussion

- Program Overview
- Program Challenges
- Program Recommendations

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Program Overview

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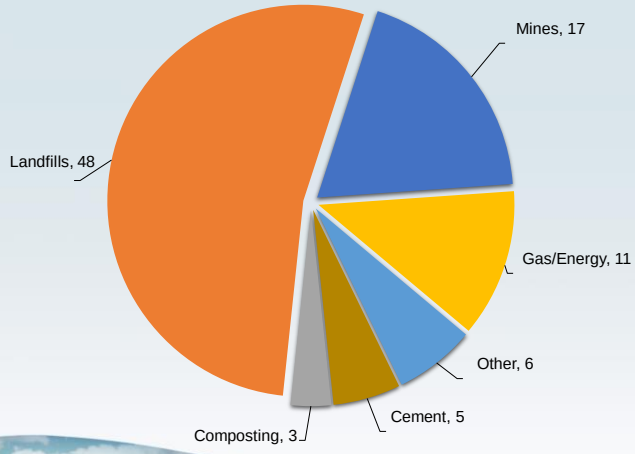
Regulations

- California Water Code Div. 7 Water Quality (e.g. Sections 13172 & 13173)
- California Code Of Regulations, title 27
  - Primary regulation for LDP sites
- State Water Resources Control Board Orders
  - Resolution 93-62
  - Composting General Order
  - Industrial Storm Water Permit
  - Disaster-Related Waste General Order
- Federal MSW Regulations of 40 CFR 258 (where more stringent)
- Lahontan Region
  - Basin Plan
  - Closed, Abandoned, Inactive Landfills/Burn Dumps General Order

Climate Change

- Climate Change Mitigation and Adaption Strategy – Adopted November 2019
- Declining Groundwater Elevations
- Increase in Inspections
- Re-Evaluation of Facilities
  - Siting, Maintenance, Final Closure Conditions

Facilities in the Lahontan Region



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Detected Releases

- Approximately half of regulated LDP facilities have a detected release
- Majority of releases from unlined waste management units
- Facilities under:
  - Evaluation Monitoring
  - Corrective Action
  - CAO

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Non-Permitted Facilities

- Unknown locations and no containment systems
  - Prioritized after a release is identified, to locate the source
- Closed, abandoned, or inactive (CAI) landfill sites
  - Estimated 40 CAI sites
- Legacy/historic abandoned mines
  - Potential environmental impacts unknown
  - Number of mines within the Region unknown

Workload Distribution

- 3.2 *PYs for the Region
- 90 Active Regulated Sites
  - Not all are actively worked on in any fiscal year
- Approximately 10 Staff Allocated with LDP Work Hours
  - LDP Staff also allocated with Site Cleanup, 401 Certification, and Storm Water hours

LDP PYs Statewide

Region	Facilities	% Facilities Statewide	Total Region % Facilities	PYs	Approximate # of Facilities/PY	Average hours/ Facility
R-1	30	4%	-	2.2	14	149
R-2	64	10%	-	3.2	20	104
R-3	47	7%	-	2.6	18	116
R-4	53	8%	-	3.5	15	139
R-5R	33	5%	35%	19.4	12	173
R-5S	96	14%				
R-5F	105	16%				
R-6A	12	2%	13%	3.2	**28**	**74**
R-6B	78	11%				
R-7	75	11%	-	5.1	15	139
R-8	41	6%	-	4	10	208
R-9	40	6%	-	3	13	160
Total	**671**	-	-	**46.2**	**-**	**139**

Office of Research, Planning, Performance (ORPP) 2018
Performance Report 2013 Facility Count

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Workload

- Routine Work
  - Project Management
  - Technical Documents
- Special Projects
  - Technical
  - State Board Requests
  - Spills/Complaints
  - Field Work

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Performance Targets

- Set annually
- New and Revised WDRs
- Amendments and recessions don’t count as targets
- Inspections

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Program Challenges

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Training and Technology

- Multi-disciplinary (slope stability, seismic analysis, hydrogeology, plan review/grading, structural geology, statistical analyses, remediation, etc.)
- Access to industry standard technology/equipment and software

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Unaddressed Work

- Unaddressed work hours associated with low-priority sites
  - Low-threat to water quality
  - Require minimal oversight
- Type of unaddressed work includes Board Order updates, re-evaluation of threat to water quality, and monitoring report reviews
- Estimated unaddressed work hours
  - FY 17/18 0.5 PY, FY 18/19 1.9 PYs

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Financial Assurance Reviews

- Closure and cleanup plans are required during the active life and post-closure period of a waste management unit
  - Include detailed cost estimates
- Updated and reviewed annually
- LDP staff statewide struggle with FA reviews
  - How much is enough?
  - State Board working on developing training

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Program Management Strategies

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Existing Strategies

1. Prioritize Facilities
2. Inspections
3. Use scientific aids to assist LDP staff
4. Cross-program training
5. Support State Board on maintaining a training contract with industry experts
6. Focused training through the Water Boards Training Academy

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Developing Strategies

1. Enhance communication with dischargers
2. Funding proposal for additional LDP PYs
3. Use in-house expertise to develop focused training modules
4. Encourage and support more LDP staff participation in the program roundtable
5. Allocate time in workplans to collaborate with agencies that co-regulate land disposal facilities

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Developing Strategies

6. Staff on-site presence at facilities
7. Train in-house administrative staff to assist in the FA cost estimate review
8. Evaluate other tools/methods to help prioritize workload

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Key Program Recommendations

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Recommendations

1. Additional PYs needed
2. Regional General Order for CAI sites
3. Revise monitoring and reporting programs (MRPs) to require dischargers to report fires and fire response actions

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Recommendations

4. Engage with State Board staff to address region-specific concerns in the future update of CCR, title 27
5. Build staff capacity with proper training and tools

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Questions/Comments?

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